The Builder.

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Sculpture in England.

THE object in selecting this subject for our remarks is to consider the present condition and future prospects of sculpture; and to inquire, without prejudice, whether the influences under which it is exercised are of a kind to insure its satisfactory development, in the sense of high-class fine art. If the inferior quality, generally, of modern sculpture were put forth as the reason for this inquiry, it might be objected that it was begging the question. It might be contended that the present state of the art shows no decline, and that, compared with its practice in other countries, the sculpture produced among us holds no inferior position.

Though this is not the question, yet, in order to avoid controversy on these points, it will be advisable to commence the inquiry in a wider field, and to examine, first, what is here intended to be implied in the term Sculpture, as a fine art; and, at a later stage, to consider its present practice and condition.

To argue fairly this question in both its phases, it will be desirable to establish at least two starting-points. One will be the standard by which the art is to be measured or judged, and the next to determine whether its practice is conformable to such standard. It will not be sufficient to inquire what the artists who exercise the art propose to do, and whether they fulfil this object, but whether the direction of their efforts is a right one.

Stated broadly, the function of sculpture or of the sculptor is to imitate objects by form, and the measure of success will be the degree of accuracy of the imitation. But this view involves only the most material or mechanical estimate of the art, and entirely excludes all consideration of its pretensions and mission as a fine art. The comparison to which it will be subjected, in order to test its claim in this latter sense, will be with those productions of art which, by the universal testimony and judgment of the best qualified judges, have been pronounced the most perfect examples of sculpture. These are the works of the sculptors of the fifth and fourth centuries before our era.

It may be objected here that this is an arbitrary limitation, and that the real standard is, or should be, Nature, not Greek sculpture. But Greek sculpture, in its best aspect, is taken merely as the truest and most faithful transcript of Nature in her highest perfection. The tests are therefore, after all, identical: Nature is still the standard; and the finest examples of Greek sculpture are the most perfect exponents of Nature in her happiest manifestations. Indeed, it is this admitted excellence alone that gives Greek sculpture its exceptional position as compared with all others,—a subject that might be usefully enlarged on, but which does not strictly form a part of the present inquiry. Taking this, then, as a ground of departure, it is to be seen how far modern sculpture may, when measured by such a standard, be considered to be in a satisfactory condition. Before drawing the conclusions to which the above remarks may be supposed at once to lead, it will be fair to take a more comprehensive view of the very important, and, indeed, vital question of imitation, as a, or *the*, function of imitative art.

If the practice of sculpture is confined simply to its material exercise,—that is, the reproduction or representation of objects by absolute form only, and not by the semblance of form, as in painting and drawing on a flat surface,—the only criterion of excellence in the art, whether it is exhibited in modelling or carving, will be the exactness or truthfulness of the representation. It will be estimated simply as an art of imitation, claiming no higher position than a mechanical exercise of skill. The greatest success in it will be attainable by any practitioner who may unite close observation with facility of hand in copying, and, so far, the whole and sole merit of the artist's production will consist in the scrupulous accuracy of likeness to his original, and quite independent, of course, of the nature or character of the object he may have taken as his model. The value or importance of the objects selected would have no place in estimating the merit of the art, for the lowest equally with the highest class of form would belong to the same category, the test of excellence being simply the more or less ability shown in copying. There has been a large and influential support of this exercise of art, in late times especially. The strength of the argument in its favour is in the unquestionable truth that where the very essence of imitative art consists in the conscientious rendering of an object, this quality should be insisted on as a *sine qud non*. It is in the application of this truism carried out to its extreme to all forms of art, that possible danger to sculpture may be apprehended.

Without at all impugning the essential value of the doctrine, it may be permitted to show in what way its extreme observance may act detrimentally to the interests of the higher forms and practice of the art under review. There is sculpture and sculpture. There is the mere bald representation of objects by form, the clever handiwork, it may be, of the mechanic, the modeller, or carver; and there is the mode of working out the same purpose, representation, which elevates the practice into a fine or refined art, and which stamps its author as a real artist. It is the non-appreciation of this distinction which must affect, more or less, the position of sculpture as a fine art. In the one case it is little other than a trade-calling; in the other it is an exercise requiring, in those who are to excel in it, in addition to the imitative faculty, the cultivation of the taste in selecting and adopting both subjects and forms for their art, and the intelligent treatment of these as modes of illustration and expression. Before entering upon these subjects of selection and artistic treatment, it will be necessary to consider the important preliminary question of the capabilities of certain arts, and the laws by which they are governed. Even as imitative arts, both painting and sculpture are limited in their power. The former, commanding a wide range, may represent certain objects, and especially aspects of nature, which are utterly beyond the reach of the sister art; but painting is equally powerless to make even her most happy and admirable scenes and effects complete by the accessories essential to their accurate reproduction. For instance, in the representation of a storm, painting cannot give the rush of the clouds or the noise of the thunder; nor in a waterfall or rippling brook the essential characteristics of movement and sparkle that give to flowing water its life and charm; nor in portraying the piping shepherd and his group of dancing nymphs, supply the tones of his tuneful reed, or the motion of the dancers, and the gay fluttering of their drapery. Still, lacking this, painting can effect what sculpture,—an art strictly of form,—has no means of attempting. Where the subjects chosen may be in themselves unattractive, possibly coarse and repulsive, painting has resources of a compensating character which are denied to sculpture. Such are colour, aërial perspective, atmospheric effects, chiaro-scuro, and picturesque accidents depending on time, as day, night, or dawn; these are, in the hands of the painter, powerful aids to give force to imitation, to gratify the taste of the lover of art in particular phases of practice; and last, not least, even to withdraw attention from what may be objectionable, in the subject represented, to passages of more pleasing character. How often the poverty of invention, or the meanness of the subject, or the faults of bad form and drawing have been compensated by the mastery shown in harmonious colouring, or the powerful effects of *chiaro-scuro*, need not be dwelt upon. Every student of art knows that endless examples of this exist in the paintings of the Flemish and Dutch schools especially.

Sculpture has no such advantages; and in discussing this art it is of the utmost importance that clear notions should be entertained of its capabilities, and of the laws by which its practice should be ruled. Its power is limited to representation by form, and form only; and the law by which the sculptor is, or should be, governed prohibits all accessorial assistance out of this pale of direct formal imitation. He may, by certain modes of treatment, increase his effects, and by skilful manipulation of his materials, by contrasts of surface-execution, and, within proper limits, by the imitation of various textures in the drapery, give both variety and force to the representation; but it must all be effected by form only. Attempts have been made to realise sculptural imitation by adding colour to the marble. There is no instance of its success, even were it a legitimate practice; but it is obvious that, however it may be exercised or advocated, it is not sculpture. It has passed into the category of painting, and, for the most part, bad painting. The best examples of this hybrid art—painted sculpture—are found in some Spanish works so treated; but here the characteristics of sculpture are so entirely subordinated to the painting, that they may be said to be absorbed by it; and, though the realism of the figures is even startling, for they look like living objects, the exhibition is rather suggestive of the toy-shop than of the labours of a real artist. At any rate, it is not sculpture pure and simple, and cannot be fairly judged as sculpture. Whether painters will allow such works to be considered pictures, and legitimate examples of their art, is a question that need not be discussed in this place.

Two eminent and popular sculptors of this age strongly advocated this practice, and introduced it occasionally in their works. One declared candidly his object was to give greater truth and completeness to the imitation; the other, a devoted disciple of the ancient Greek school of sculpture, professed to have adopted it because he had read or been told that the ancients coloured their sculpture. It is not worth while to argue the matter as respects the productions of these artists. Their fanciful practice had no marked influence on the art of their time, and neither of them has left any work so treated that can be referred to as even a partial success. With respect to the supposed

authority of the ancients for the practice, it need only be said that though it may have been done exceptionally, there is no evidence of its having been the custom of the sculptors of the best period of art to use it in their most celebrated works in marble. There are accounts handed down of accessories of barbarous finery being supplemented to votive and similar productions, where the richness of the material was supposed to give value to the work dedicated, or to express more prominently the devotion of the donors; but this affords no fair ground for saying that, as a rule, all ancient sculpture was painted. Such practices were, no doubt, common in the earlier ages and among barbarous nations, before sculpture took its position as a fine art; and in the decadence of the art,—and it is one of the proofs of decline,—it is known recourse was had to every kind of meretricious trickery by which the public fancy could be attracted; and painting, tinting, gilding, the use of variously-coloured marbles, and even real stuffs for drapery, entered into the sculptor's practice. But none of this was sculpture in its proper sense.

Assuming, now, in continuation of the inquiry, that the best standard of sculpture is to be found in the great schools of the fifth century B.C., and of which the most perfect examples may be seen in the British Museum, in the series of sculptures brought from the Parthenon at Athens, it will be useful to endeavour, in a few words, to define the principles upon which the art was then conducted. There will be less difficulty in arriving at a satisfactory conclusion here, because the problem can be solved by reference to existing authorities, the works themselves. The speculative opinions, as to probable dates, and schools, and subjects, propounded by *dilettanti* scholars and antiquaries (who, usually, have but little practical knowledge of art) are of no value here, where works are to be judged on their merits, and not on the archæological ground of their age or history. The requirements for this judicial power are an intimate acquaintance with the anatomy, character, and capabilities of all classes of human and animal form, a knowledge of the laws of beauty, and a power of appreciating various (purely technical) refinements of execution, which those only who have been educated in the practice of the art can thoroughly possess. With these qualifications, united with fine taste—a combination, it must be admitted, but rarely to be met with,—the judge will recognise in the monuments referred to the most perfect and the noblest examples of sculpture that have reached modern times. The main principles which seem to have directed the sculptor of the time, were, first, the choice or selection of the class of form best adapted to express the idea, or the subject conceived; and, secondly, the truthful reproduction of these forms. The æsthetic reasons for the selection of certain types need not now be discussed, but their consideration will be found of no small importance to the student who desires to extend his inquiry as to the causes of the superiority of Greek sculpture. The sculptures of the Parthenon supply the student with the following material marks of excellence,—material because the spirit and exaltation that gave the impulse to the authors of these objects of their veneration, the statues of divinities and heroes, cannot be realised, even faintly, in modern times, by any effort of the imagination. The material points, then, of value to the student are, first, the thorough knowledge exhibited of the construction of the forms, both human and animal, as shown in its external or superficial anatomy, and of the capability of action in the several forms; and next, the perfect organisation which is expressed in the beauty of these forms. Their further recommendation is the wonderful executive treatment of the sculpture, where may be seen the utmost care and refinement of surface-finish without littleness or sacrifice of breadth. But too generally the extremities of the figures have been injured, both by time and intentional ill-usage; but where the surface is perfect, the supreme mastery of all the legitimate means of producing the desired effects is as edifying as it is obvious. The large and noble treatment of the naked, enhanced by the skilful management of the drapery, wherever the two come into contact, exhibits the thorough acquaintance of their authors with all the available resources for giving increased effect by contrast; while the busy and varied action of human and animal life in the metopes, and more especially in the Panathenaic procession, supply the most valuable canons for the proper treatment of sculptural composition in relief. Again, the forms throughout, though selected for their normal excellence, and therefore free from all coarseness, exhibit the utmost truth to nature, even in the most minute particulars, as is seen in the care bestowed on the distinctive execution of flesh, bone, and tendon, in the human and animal figures. This refinement is especially observable in the heads of the horses, and in the treatment of the joints throughout this wonderful composition. It is to be regretted that, owing to bad arrangement, both as to position and light, these, the finest examples existing of Greek sculpture, can only be very inadequately seen and studied.

One cause of the beauty of the forms in the Greek sculpture may no doubt be attributed in great measure to the purpose to which the art was applied. It was essentially, it may almost be said exclusively, employed in the service of religion; for, even when the statues were not strictly representations of the divinities—as was the case with the *iconic* or portrait statues of those who had been three times crowned in the Olympic Games—yet, these latter, being dedicated with great honour and placed in the temples, partook of a *quasi* religious character. When Phidias and his contemporaries illustrated Greece with their performances, the appropriation of sculpture to the noblest objects was the rule. The study of the highest class of form was, therefore, essential to the development of the *idea* that the gods and heroes should be represented only under such types as would express the assumed perfection of the divine and heroic nature. And that this comprehensive *ideal* should not be lowered, it is remarkable that no portrait statues are known of this period. It was, no doubt, thought that this practice would have too much individualised the art, and interfered with the general normal forms, considered fitting and appropriate to the grandeur of an art devoted to the service of the immortal gods. In the subsequent periods of the exercise of sculpture in Greece, even as early as the fourth century B.C., the strict principle above referred to had ceased to direct the sculptor's practice. The greatest possible attention was still given to the truth of imitation, and to the refinements of execution; but the speciality of the great school which has stamped its character on sculpture, in the choice of the noblest class of forms, in all the varieties required for the illustration of the most elevated myths or histories, no longer constrained or exclusively guided the sculptor.

The first step in the deterioration of the *ideal* of sculpture was the change from the highest sentimental or religious art to its making its appeal to the sense. The nude female figure under the name of Venus or Nymphs, the young Bacchus, Cupids, and similar subjects of a sensuous character, and recommended by the most exquisite execution, were now the favourite objects of the sculptor's art. Soon after this, portrait was introduced, of which it is believed with good reason that no examples are known previous to the date of Alexander the Great. The moment this innovation was admitted, a deterioration or lowering of standard was inevitable. The new practice naturally attracted attention; and from its realism and the interest attached to portrait, from the appeal it makes to personal feelings, it soon caused a sensible diversion from the more limited, though noble application of the art. The particular and individual now began to occupy the attention of the sculptor, instead of, as heretofore, the general or normal; and as there was less occasion and temptation to study the nobler class of forms, a lower standard, both of art and of artists, supervened.

This is a part of the history of sculpture of great interest and importance. Here it is only cursorily glanced at, as one of the causes which affected the healthful progress of the art. It is curious, and should be instructive to observe, how rapidly after this sculpture declined in almost every particular that constituted its greatness as a fine art; and for this reason, the facts are here brought forward for the importance they have exercised on all subsequent attempts to restore a fine school of sculpture. The position of the art, from the time of Alexander the Great and the dismemberment of the Macedonian empire, has been uncertain and unsatisfactory. It has never been exercised on any general principle. The art has been practised to suit the varying fashions and tastes of the day, sometimes affecting and imitating the ancient forms, but without their spirit; sometimes busied with portrait; sometimes attempting the combination or adaptation of modern forms with ancient accessories; and sometimes only aiming to represent mere commonplace objects to catch passing attention and to secure patronage.

It is from this point, then, that the position and prospects of all sculpture have to be judged, since the period when the fall of the art in Greece became a fact; and when the Roman conquests suppressed the exercise of sculpture in what may be termed its native home. An extensive immigration of Greek sculptors into Italy then took place, and Rome itself was filled with artists driven from their country, who exercised their calling only in order to obtain a livelihood. It ceased to be practised on any higher ground than that of expediency.

It must, however, be admitted that works of great material excellence were produced at this time, and *replicas* and repetitions of celebrated statues were multiplied to adorn the public places and squares of Rome, and to decorate the palaces of rich nobles, whose patronage of the arts was, however, attributable rather to a love of display than to any remarkable sensibility to their value or beauty. This trade-exercise of sculpture prevailed with more or less activity during the reigns of the earlier emperors; but many anecdotes of the time show that there never was any great feeling for it among the Romans. The most favourable opportunity for its attaining a high *status* was at the date of the Antonines, and especially in the reign of Hadrian, but this passed away with that liberal promoter of art, and subsequently the interest exhibited in it by some few of the possessors of sovereign power was rather a fashion than a real art-impulse, and was confined to making collections of ancient statues for decorative purposes, and as objects of mere show. The position of sculpture as a fine art became daily more and more depressed. To follow its waning practice through the different phases of its decline, would scarcely repay the trouble. It is sufficient to say that, as a fine and noble art, such as it was in the age of Pericles, and under the direction of Phidias, Polycletus, and the great sculptors of the schools of Athens, Argos, and Sicyon, sculpture had ceased to exist. When it did rise partially from the abject state into which it had fallen, it scarcely could take any very high rank. The chief condition of its excellence, practice on the human figure, was denied it in the absence of all opportunity for its display. This great advantage could not be looked for in modern times, and therefore, to that extent, the excellent discipline and education afforded by study of the human form was lost both to the sculptor and the public. Among the Greeks, the people were not only accustomed continually to see this freely exhibited in the public games; but, from the care taken to develop the physical powers, they became competent critics and judges of what constituted the highest perfection of form.

It would be as inconsistent as useless to attempt now a return to the classical style of sculpture as it existed in ancient Greece, when none of the conditions essential to its success exist. Without public sympathy with its subjects, without that poetical impulse which gave life to classical invention, without education in the principles of beauty, and with the habits and feelings of a people inhabiting a cold, northern climate, utterly opposed, both from considerations of delicacy and comfort, to the exhibition of the undraped figure, no such restoration could be thought of as likely to have successful results. When occasionally such reproductions are seen, they are rather academical exercises than the expression of original thought or feeling, nor are they calculated to interest popular sympathies. However meritorious they may be, as imitations and reminders of Greek sculpture, they never can take other than a secondary position; and yet, in point of execution, the best of them are frequently as good as, and may be better, than the general run of the works of the Greco-Roman period. It is not their want of merit so much as their unreality, their being only imitation-art, that condemns such works to eventual obscurity and neglect.

But it is no reason because sculpture representing Greek myths and subjects, in the Greek mode, cannot be successfully revived in these days, that the art may not be practised in a manner to afford opportunity for very noble results. Recognising as a fact beyond dispute that in one important condition of excellence in sculpture,—the free treatment and exhibition of the nude human figure,—modern art is exercised

at a disadvantage, compared with its practice among the Greeks; and that this circumstance has interfered with a most important function of art,—that of educating the public to understand and appreciate the highest class of beauty, yet this drawback does not necessarily preclude sculpture from asserting itself, under other aspects, as an art of great power.

It is to this subject, of such vital interest to the life and success of modern sculpture, that attention will now be directed. But, as this part of our task will necessarily involve a survey of the productions of many widely-differing schools, its proper consideration will require more space than can here be given it.

ISAMBARD KINGDOM BRUNEL.*

A FAITHFUL account of the life and labours of Isambard Kingdom Brunel would constitute an important, though a brief, chapter in the history of Human Progress. The regard of the student, who has pondered the biography of the men whose memories are most illustrious, has been too often dazzled and perverted by the splendour of military success, or by the adroitness which has made the mastery of human weakness the stepping-stone to power, to wealth, and to fame. The men who have spent their lives in conflict with physical difficulties, or in the unremitting effort to penetrate the secret counsels of nature, are fewer in number, and more modest in the record they have obtained, than the host of the vulgar great. Yet what rightly-balanced mind can value the blood-stained laurels of Cæsar in comparison with the gifts won for, and handed down to, the entire human race by such men as Pythagoras, Archimedes, and Aristotle? In this noblest school of human intelligence Brunel was a hereditary pupil. A glance at what he actually effected, during a life as short, measured by years, as it was long, measured by labours, is enough to show that his name will hereafter occupy no inferior rank among the servants and the benefactors of mankind.

It has been with no slight anxiety that the small and rapidly diminishing number of those who had the advantage of personal acquaintance with Mr. Brunel, have looked forward to the appearance of his Life, written, as a maiden effort, by his eldest son. The charming volume in which Mr. Richard Beamish, well known as an assistant of Sir Marc Isambard Brunel, has told the story of the engineer of the Thames Tunnel, and of the block machinery of the navy, led some of us to hope that we should receive from the same facile pen a memoir of the noblest result of Sir Marc's care and labour—the cultivated genius of his son. The difficulties which lie in the path of a biographer, too profoundly interested in the character of his subject, are well known to all persons acquainted with literature. In the natural fear which a sensitive mind may well entertain of falling into that style of treatment which has earned for Boswell a spurious immortality, lies the danger of being driven to the production of a cold, bloodless, mechanical chronicle. It is, therefore, with no little pleasure that we find the volume before us such as in no way to lead us to regret the silence of Mr. Beamish. While speaking with a modesty—we may say a hereditary modesty,—which does credit to a biographer, Mr. Brunel has not been betrayed into the fault of lessening the grand outline of his father's character, although he may be said to have given it only *en silhouette*. His method has been safe, for it has been historic. It is from the works, and the letters, and reports of Isambard Kingdom Brunel that we are enabled, by his son and historian, to form some imperfect idea of what manner of man he was. When we look at a picture in which, not only has the author sought to "nothing extenuate nor set aught down in malice," but where thought and action are displayed with a very truthful simplicity, we are but the more convinced of the magnitude of a loss which none who knew the man have ceased to deplore.

The method of the volume, consisting of 568 closely-printed pages, is one suggested by the nature of the biography which it attempts to trace. A brief chapter is given to the early life of Mr. Brunel, involving, of necessity, some account of part of that of his father, especially with reference to that great sub-Tamesian work which as yet stands alone in the history of engineering. Mr. Beamish's life of Sir Marc Brunel is here quoted by that great inventor's grandson. (The two volumes,—the life of the father and of the son,—should stand side by side among the books of constant reference in the library of every engineer.) Fourteen chapters are then devoted to the successive works executed by Isambard himself, the history of the several undertakings being traced in clear and distinct order. While we have thus to travel more than once over the same ground, in point of time, a much clearer grasp of the subject is attained than if a merely biographical order had been followed; as in extracting the notes of a diary. We have then an important and valuable chapter on Mr. Brunel's professional opinions and practice; one, which we could wish had been much longer, on his private life; appendices, containing reports on two of the great points of his professional warfare—the broad gauge and the screw-propeller; and the essential, but too often neglected, labour of an index.

In a work, which we regret to find limited to a single volume, Mr. Brunel has not spared room for such a brief summary of his father's career as might find place in a biographical dictionary. From the materials which he has furnished, aided by personal recollections, we must therefore endeavour to present such a sketch to our readers. Yet let them remember that, high as the engineer must rank in the opinion of all competent to appreciate his merit, the man claims even a warmer tribute.

Like so many of those men to whose ingenuity England is in no small degree indebted for her mechanical excellence, Isambard Kingdom Brunel was of French blood. His father, Marc Isambard Brunel, was a native of Normandy. The grand old baptismal name, borne by the three generations with which the volume before us is concerned, dates from Carlovignian times; and is either identical with, or closely allied in its etymology to, that borne by the ancient Seigneurs de Bourbon, before that lordship came by marriage to the seventh son of St. Louis. Marc Isambard, a consistent Royalist, fled from the Republican terror. He settled in England in 1799, and, after some adventures of romantic interest, married an English lady, whose family name was borne by his son. The first great work undertaken by Sir Marc in this country was the machinery for making blocks, which he designed and erected for the Government at Portsmouth. He also designed suspension bridges for the Isle of Bourbon; and carried out the most important engineering work that up to his time had been attempted in England,—the tunnel under the Thames at Wapping.

Isambard Kingdom Brunel, only son of Sir Marc Isambard, was born at Portsmouth on the 9th of April, 1806. For a time he was a pupil in two schools in England, and for two years a student at the Collége Henri Quatre, in Paris; but the main part of his education was derived from the care of his gifted father, who taught him Euclid before he was eight years old. As early as the age of four, his facility in drawing attracted attention. From his seventeenth year he was regularly employed in his father's office; and before he was twenty, on the occasion of the sudden and alarming illness of his father, the works of the Thames Tunnel were left under his direction. He subsequently held both the nominal and actual post of resident engineer of the Thames Tunnel, up to the time of the suspension of the works in consequence of the irruption of January, 1828; by which disaster he was seriously injured, very narrowly escaping with his life. In 1831, he was appointed engineer to the Clifton Suspension Bridge, after a double competition, in which his design was preferred to that, among others, of the veteran Telford. In the same year, he made designs for docks at Monkwearmouth, a portion of which he commenced to build in 1834. In 1832, the directors of the Bristol Dock Company consulted him as to the improvement of their Floating Harbour. In March, 1833, he was appointed, by a committee formed of members of the corporation of Bristol, and of other public bodies of that city, engineer to carry out the project of a railway to London. He prepared the plans and surveys for this line; and out of fifty-four days' contest in the Committee of the House of Commons in 1834, eleven were occupied by the cross-examination of Mr. Brunel. The Bill, having passed the Commons, was rejected by the Lords; but received the Royal Assent on the 31st of August in the following year. From that time Mr. Brunel held a position second to no man in his profession. He constructed railways in England, Ireland, Italy, and India, to an aggregate length of upwards of 1,200 miles; one of his main lines extending from London to the Land's End, and another to the extremity of South Wales, at Milford Haven. From 1835, the year of the passing of the Great Western Railway Bill, to his death in 1859, he was also engaged in the design and execution of vessels which effected an entire revolution in ocean steam navigation. The *Great Western*, his first steam-ship, started on her first voyage to New York on the 8th of April, 1838, and struck soundings off Newfoundland on the ninth day, with nearly 200 tons of coal still on board. This was Mr. Brunel's answer to the "demonstration" by Dr. Lardner, of the impossibility of the undertaking. The *Great Western* had a measured tonnage of 1,340 tons, and a displacement of 2,300 tons. She was followed by the *Great Britain*, which sailed from Bristol for London in January, 1845. Her tonnage measurement was 3,443 tons, and her displacement, 2,984 tons. The third of Mr. Brunel's steam-ships, the *Great Eastern*, was launched on the last day of January, 1858. Her extreme length was 693 ft.; her breadth, 83 ft.; her gross tonnage, 18,915 tons; her displacement, at 30 ft. draught, 27,419 tons; and her nominal horse-power, 1,000 horses for the paddle engines, and 1,600 for the screw engines. Mr. Brunel was also the means, having been consulted, without receiving any fee, by the Board of Admiralty, of introducing the screw into the Royal Navy. He executed dock and pier works at Bristol, Plymouth, Briton Ferry, Brentford, and Milford Haven, between 1848 and 1857. The immense facility to be obtained in the conduct of traffic, no less than in the execution of works, by the use of the electric telegraph, was first grasped by Mr. Brunel; his plans embracing applications of this mode of communication reaching from the working of a railway to the steering of a ship. In a very different province, the water-towers of the Crystal Palace, 284 ft. high, were his design. To the questions of the best mode of rifling guns, of the construction of the most efficient floating batteries, and, we may add, of the improvement of explosive projectiles, he gave a degree of attention, of the fruit of which, most unfortunately, the Government neglected properly to avail themselves. It is not too much to say that, had Mr. Brunel lived and been consulted, such a disaster as the loss of the *Captain* could not have disgraced our Admiralty. More anxious to mitigate human suffering than even to improve the armament of the country, Mr. Brunel, from February, 1855, gave an unstinted amount of time and exertion to the design and erection of the Renskoi Hospital, on the Dardanelles; which rendered that establishment as superior to all previous buildings for the purpose, in minute arrangement of every detail no less than in general design, as was the case in regard to almost every subject to which the great engineer directed his conscientious and inexhaustible energy.

In 1858, Mr. Brunel was ordered, by Sir Benjamin Brodie and Dr. Bright, to spend the winter in Egypt. He returned to England in May, 1859, and in September of that year sank under an attack of paralysis.

The loss to the country and to the world, at the early age of 53, of a man who had crowded so much into the brief term of the third of a century, may be regarded as the penalty paid for the one great error of his life. Gifted with a frame that seemed almost unaffected by fatigue, Mr. Brunel allowed himself, for many years, neither adequate rest nor due relaxation. For nights together he frequently never went to bed. During the construction of the Great Western railway, on his journeys along the line, he was accustomed to make his appointments according to distance, without any reference to the hours of day or night. To a given point his horses would take him in so many hours; and at the time thus indicated, whether morning, noon, or night, those who had to transact business with him in the locality had to meet him. His only sleep, on these occasions, was taken in his carriage. It may be questioned, however, whether he did not in these journeys actually pass more time in slumber than when he kept his silent and industrious vigils in his house in London.

Connected with this unsparing devotion of the whole energy of the man to the calls of duty, must be remarked a special peculiarity in his mode of conducting work. Mr. Brunel's rule was to see to everything himself. It is no doubt true that, in almost every matter to which he bent his mind, he found how far and how

* The Life of Isambard Kingdom Brunel, Civil Engineer. By Isambard Brunel, B.C.L. London: Longman, Green, & Co. 1870.

feebly the best assistants that he could engage limped behind his own fiery and unexhausted energy. Yet his sound common sense,—a quality predominant, if any single virtue were predominant, in his intellectual organisation,—should have taught him that he was endeavouring to overpass the powers of human nature. Could he have ensured a century of life, without needing slumber or relaxation, he might perhaps have fully discharged the tasks which he so inexorably demanded from his brain. Thus, not only did he shorten his natural term of activity, but he inflicted on himself hours,—nay, years,—of acute suffering. He would work on, regardless of neuralgic pain under which most men would have sunk, deriving a strange solace from a constant use of tobacco that would have clouded any other brain. This incessant labour, this anxiety to see for himself to every detail,—prevented the formation of such an organised staff as would not only have lightened his labour and prolonged his usefulness, but, in some cases, secured greater success in the execution of his schemes. His assistants scarcely took the rank or shared the responsibility of those attached to other eminent engineers. Some of them were but incompetent men. The ready kindness of their chief screened their shortcomings, and made up for their imperfect work. But the result was, that, with the exception of the one assistant who latterly occupied a position resembling that of a chief of the staff, and, perhaps, one or two others, Mr. Brunel's subs were little more than clerks or inspectors. Indeed, in some instances, mere inspectors, by dint of minute and vexatious adherence to the letter of the very stringent specifications prepared by Mr. Brunel, made themselves persons of more importance than their commanders, and exerted a pressure upon contractors that had an unfavourable effect on the conduct of more than one important undertaking.

In his dealing with contractors, it may also be greatly questioned whether the position invariably claimed by Mr. Brunel did not involve a certain inconsistency. It was his will always to be absolute. With regard to his directors, his opinion was, that unless he possessed their entire confidence, they had better employ some other engineer. No one could hold a more lofty, or we think a more just, opinion of the duty he owed to his profession in this respect. But then, as between the directors and the contractors, he claimed to be the sole arbiter. He thus constituted himself at once executive and judicatory. His love of justice, no less than his mechanical genius, no doubt enabled him to fill this double *rôle* with a success which few men could hope to imitate. But still the question suggests itself,—Was it right for any man to be placed in such a position? Men of the highest authority have held that it was not. In the earlier specifications prepared by Mr. Brunel, arbitration by an engineer, to be named by himself and the contractors, in case of dispute, was provided for. Any attempt, however, to enforce these clauses was always resisted by their framer; and from the later editions of his general specification,—to the revision of which he gave continual attention,—these clauses were removed. It was his intent that his authority should be unquestionable. It was, there can be little doubt, not the vulgar love of power, but the desire that everything should be done in the best possible manner, that made him insist on this rule. His position was thus as exceptional as his genius; but it may be concluded that his hands would have been stronger, his comfort greater, and his valued life prolonged to the period due to his iron constitution, had he not so perseveringly accumulated all functions on himself. He might—and those who knew him best thought he could—perform *every* duty better than any subordinate he could find. But it was a fatal deduction from this premiss to hold that he could better perform them *all*.

Of the magnitude of what he actually effected, we have little space to speak. He doubled not only the speed, but also the convenience of transit, both by sea and by land. Alone among the great names of his day, he made provision for the requirements of the future. To make railway carriages broad enough, and steamers large enough, to convey, with increased economy, and at augmented speed, the traffic of the future, was but the outcome of his provident forethought. We are not about here to open the question of the broad gauge, which is very temperately referred to in Mr. Brunel's Life. But it cannot be doubted that the limit of the carrying power on the most busy narrow-gauge lines is now attained. Week after week we have fatal proof of this fact. We will not assert that a double broad-gauge line, if carried out according to Mr. Brunel's ideas, would do the work of a fourfold narrow-gauge line,—but, at all events, it would afford a much greater margin for the economical development of an increasing traffic. As to the size attainable by ocean-going steamers, Mr. Brunel fought the battle single-handed. There can be no doubt as to the victory he obtained.

No part of the volume before us is of more service in enabling the reader to form a correct view of Mr. Brunel as an engineer, than the patient and accurate detail of the launching of the *Great Eastern*. A painful, dim, suspicion that some unexplained want of success attended that unprecedented operation is dispelled by the simple record. We see what had to be done, what obstacles arose, and how, one by one, they were vanquished. The financial non-success of the atmospheric system is also fairly and honestly set before the reader. The only point in which we are disposed to differ from the author is, that we hold the opinion, which was shared by Monsieur Eugène Flachat, who gave much study to the subject in France, that the loss arising from the irresistible rush of caloric into the rarified air bore a much higher ratio to the leakage of the valve than Mr. Brunel allows,—that, in fact, the mechanical difficulty might have been surmounted, but that the physical difficulty was more serious. Nor does this physical difficulty appear to have been anticipated by any one.

We could wish that more space had been devoted to personal anecdote. Those who have been accustomed to regard the engineer of the Great Western as a species of ever active intellectual machine,—a man who lived only in and for the execution of novel and stupendous work,—have formed but little idea of the buoyant gaiety, the indomitable patience, the exquisite taste, and the inherent kindliness, of Isambard Brunel. His stature was low, but so knit and proportioned as to laugh at fatigue. The engraving, at the commencement of the Life, gives a somewhat conventionalised view of his face; the nose, especially, being too heavy. There is a very speaking photograph taken of him, as he leant against the chains employed in the launch of the *Great Eastern*; in which, however, the chimney-pot hat, of which he was a steadfast advocate, hides the perfect curve of the head. His eyes were rapid and piercing in their glance; and the modelling of his lips betokened a refined, and even an imperious taste. This quality found appropriate expression in his works. The old canal type of bridge, and the unrelieved shed roof, were thought adequate for our public works before Brunel introduced features as novel as they were striking. In the station at Swindon he first adopted a graceful Italian ornamentation, to displace the barrack style previously in vogue. In the Great Western Station at Paddington, he has produced by far the finest work of the kind in Europe; a building as superior to the unnecessarily costly wagon-roofs that disgrace the Thames-side stations, as it is to the carpenters' sheds at Euston-square. While turning night into day at his desk, he would find time to pick up a rare bit of china, or to floor an opponent in conversation by an apt quotation from Mr. Micawber. To these genial qualities testimony is borne, in the volume before us, by his old friends Mr. Burke and Mr. Hawes. His admirable qualities as a negotiator, and his unrivalled success as a witness, were well known. In cross-examination, he was unapproached. On one occasion the case of a line, which did not look very brilliant on the close of the examination in chief, was so thoroughly established by Brunel's replies to the opposing counsel, that he dryly remarked to that barrister, as the committee broke up, "So-and-So, our directors had better retain you to cross-examine me next time."

On one occasion only can we remember his having been taken aback. In 1852, during a visit to South Wales, his second son, a bright intelligent lad, who accompanied him, asked some question as to the Barlow rails, which were then being laid on that line. Mr. Brunel replied that they were an experiment. "What, papa," exclaimed the boy, "do you mean to say that all the South Wales line is one great experiment?" The engineer winced, and for once was deaf.

If one quality more than another should be held up to the admiration of those who would emulate the career of Isambard Brunel, it is his unhesitating, unfaltering conscientiousness. His moral courage scarcely fell short of his utter physical fearlessness. No toil was spared, no cherished project was clung to, when he found that fresh light was to be obtained on the subject. To arrive at the truth was his main passion, and for that reason he obtained a deeper insight into mechanical law and practice than almost any other man. His genius none can imitate,—it was the gift of God, and was the more remarkable from appearing in the second generation. But in patience, candour, energy, labour, command of temper, kindliness of disposition, love of justice, and regard for duty, he set an example all would do well to study. His character was one to be admired in all that was native, and to be imitated in all that was acquired. His monument is conspicuous in the noble works which he executed. His memory is dear to all who knew him. His biography, as published by his son, is a contribution of no ordinary value to our professional literature, and displays an instructive example of the manner in which the rarest natural gifts may be improved by the most unremitting culture. His remains rest, in "the holiest of our holy places," near the dust of those most famous in our history. It would be difficult to point out a tomb which commemorates the name of a more faithful and illustrious *Naturæ minister et interpres*.

ENGLISH AND WELSH ABBEYS, CASTLES, AND HALLS.*

If Mr. Pickwick, or the philosopher whom Sam Weller puzzled at Clifton with the intermittent gleam of his dark lantern, had proposed to himself to write a book upon the structural antiquities of their native country, it is possible he would have produced exactly such kindly, old-fashioned, unquestioning volumes upon the subject as the two that have just been completed by the well-known author of "The Curiosities of London," Mr. Timbs. The sceptical mote that appears in the modern antiquary's eye is not in his; neither is he afflicted with a subversive beam. The delightful old legends that engird so many of our ancient castles, abbeys, and manor-houses, have as fresh a charm for him now as they had sixty years ago; and he tells them with as firm a faith as though they had never been dissected on the library-table of the modern archæologist, and found wanting. It is no pleasure to him to detect the absence of a vertebra, and see the tremble and fall of the subject he is examining. He summons up his ghost-stories tenderly, and dismisses them with care. Let any one gainsay it who chooses, we were in need of such a work treated in such a manner. Already our lip-lore has decreased to a shred in these matter-of-fact days; and if we are to have nothing but winnowing and weeding of our old legends we shall some day find ourselves without any.

Mr. Timbs does not pretend to have visited all the buildings whose "popular history" he relates. Such descriptions of them as he occasionally gives are taken from accepted authorities, though, perhaps, in some cases, from authorities that were accepted in days when topographical surveys were rare. Hence, for architectural details we must not look. But as they are not promised, we cannot justly complain of their absence. Here and there this sketching in the library instead of upon the spot, however, leads to a little shortcoming in the matter of bringing down the history of a building to the latest events. Looking to the account of Stowe, for instance, we see Mr. Timbs says, by way of conclusion to his remarks:—"Of the many instances of fallen fortune to be found in human history, the sad fate of Stowe and its possessors presents us with the most melancholy lesson,—to lecture us with its fallen grandeur, and to impress us with the virtue of contentment, and teach us that 'not a vanity is given in vain.'" Now, if Mr. Timbs had happened to take a return ticket to Buckingham, he would have found that Stowe is in the process of rehabilitation, and is gradually becoming as well stored as it was before the memorable sale. Or, turning to Berwick, we find no word of the fact that the Castle has been displaced there to form the railway-station; or to mark there is nothing to indicate that the noble castle is down, leaving only a mound as its site. Similar want of

* Abbeys, Castles, and Ancient Halls of England and Wales; their Legendary Lore and Popular History. By John Timbs. London: Frederick Warne & Co., Bedford-street, Covent Garden. New York: Scribner, Welford, & Co.

posting-up in recent facts to be detected here and there might lead to the impression that the blemish was one that pervaded the whole work. This is by no means the case. In many instances Mr. Timbs has availed himself of the most recently published information. If not, he would have attributed the carvings at Chatsworth to Grinling Gibbons, as was formerly the rule, instead of the Watsons. And in the main, in his bright pen-and-ink sketches there is much to admire and be pleased with.

Mr. Timbs tells us that Harlech Castle was originally called Twr Bronwen, from Bronwen, the ancient British princess, who was the daughter of Llyr, and sister of Bran, the father of Caractacus. This would have been a good opportunity to relate what is known of the history of this "fair-breasted" beauty. The 51st of the Welsh Triads mentions that a blow given to her by an Irish Prince, Matholwch, was one of the three luckless blows of Britain, and the cause of war; and the Mabinogion records that she was buried on the banks of the Alaw, in Anglesea; and about forty years ago, on the banks of the Alaw, at a spot known as Twys Bronwyn, was found a square kist, with a funeral urn in it, supposed to be that of the princess in question, which urn is now in the British Museum. But our cheery and good-natured antiquary leaves the lady alone, and records instead the plucky defence of the old fortress by a Welshman named Dafydd ap Jevon ap Einon, in the fifteenth century. "I held a castle in France," said this brave Taffy, "till all the old women in Wales heard of it, and now I will hold this Welsh tower till all the old women in France hear of it." And so he held it through a long siege by the Earl of Pembroke; the earl's brother and a large force encircling it, and his garrison suffering fearfully from famine, till at last the most honourable terms were offered to induce him to surrender, and he gave up the castle, after keeping it for nine years, against Edward IV. Even his foe became his friend; and when Edward at first refused to stand by the terms he had made in his name, Pembroke swore, "Then I will put Dafydd and his garrison into Harlech again, and your highness may fetch him out again by any one who can; and if you demand my life for his, take it:" of which generosity we hope all the old women in France heard too. Silver-grey, wind-worn, and frayed are the remains of Harlech Castle, with Plantagenet shoulder-headed windows, and great pointed archways side by side, with narrow arrow-slits, scarcely 10 in. high, that were part and parcel of old Welsh valour; and between the castle and the sea lies spread a low, green, oozy marsh. Mr. Timbs thinks it "overhangs" the sea, as Bamborough and Dunstanborough, on the north-eastern coast, literally do; but there is this low-lying tract of marsh at the foot of the steep on which it stands. This little uncertainty about the site is, however, scarcely worth mentioning.

Mr. Timbs has gone over a field that is too vast to be minutely explored single-handed with complete success. If he has made slips that local historians can put their fingers upon, as when he gives Alnwick to the Percies by the exclusion of a natural son of Antony Bec, Bishop of Durham, he must, on the other hand, be accredited with great care, generally, and much taste. Here is a pretty landscape, with Ludlow in the foreground:—

"The old town of Ludlow,—in itself an object of considerable interest,—stands upon a knoll, and to the westward, on the heights of a steep line of rocks, rise the grey towers of Ludlow Castle, which at one time must have been impregnable. From this point the view is, perhaps, unsurpassed in all England. Eastward is Titterstone Clee Hill; on the north is Corve Dale, and a series of hills which stretch as far as the eye can see, the beautiful valley of the Teme lying immediately below you, with the Stretton Hills as a background; to the west is a line of forest; while, looking back, the Teme, prettiest and tiniest (in some places) of rivers, disappears in a narrow ravine, 'formed' (says a contemporary writer) 'by some convulsion of the ancient world, which cut off the knoll on which now stand the castle and town, and gave it its picturesque character.' So beautiful, indeed, is the surrounding country, that Ludlow has been called by an enthusiastic admirer (probably a Salopian) the queen of our inland watering-places."

Much in this manner, we are shown between three and four hundred remarkable places, famous either in song or story. This selection by no means exhausts our national store. In the provinces, some of his readers will consider their particular lions, which may be omitted, as worthy of recognition as others that are inserted. Northumbrians will miss Ford Castle, for instance, close to Flodden field, where James IV. of Scotland, "the champion of the dames," spent the last few hours of his life before the great battle, fascinated with the beauty of the wife of the owner, "Sir Hugh the Heron bold," as painted so gorgeously in Marmion; Bothal Castle, Chillingham Castle, Harbottle Castle, all famous, and Brenckburn Priory, among others. Durham men will look in vain for Lambton Castle with its legend of the famous Worm, or for Bishop Auckland Castle, now the residence of the Bishop of Durham, built by the fighting bishop, Anthony Bek, implicated in the transfer of the De Vescies' estate to the Percies, though not in the manner narrated; Warwickshire readers will consider Arbury Hall, with its ruddy and sunny courts and grey and green terrace, slighted; Kentish folks will wonder why Saint Radigan's Abbey was not added to the rest; and so on through the counties. We recommend the book as a pleasant, chatty companion for a leisure hour, that tells, agreeably, of many an odd and out-of-the-way place, as well as of the chief country seats of the ancient nobility. We have all read of hiding-places, recesses within walls, and of the magical appearance and disappearance of individuals upon the scene by their means; and here we are given minute particulars of two of the most remarkable halls containing them. Ingateston Hall and Hendlip Hall. Holy Sepulchres, *i.e.*, the empty arched recesses in chancels, where, in old times, a crucifix or effigy of the Saviour was placed on the evening of Good Friday, have a chapter; Stamford Bull-runnings have another. Lady Godiva, Queen Eleanor, Arabella Stuart, Elizabeth, Queen of Bohemia, Amy Robsart, Tennyson's Countess of Burghley, and other dames of whom we are never tired of hearing, sweep across the pages; as well as more ghostly personages. The Boscobel Oak, beehive-houses, curious caves, celebrated fields, subterranean chambers, the Star-chamber, Avebury, Stonehenge, historical stones, such as King Arthur's Stone at Gower, rocking-stones, and the Stone of the Arrows, near Aber, where the old Welsh princes sharpened their spears and arrows, are, among miscellaneous matters, introduced, that do not come, strictly speaking, under the heading of abbeys, castles, or halls, and yet have stories belonging to them that are part of English history. They form, indeed, a relief to the scores of oak-floored and panelled chambers, hung with historic portraits, and enriched with coffered ceilings and carved chimney-pieces of ancient country-seats. We get tired of a noble avenue if there is too much of it; and it is possible to have too many haunted corridors, even though it be Queen Katherine herself, with her crown and train, that glides adown them, as at Kimbolton; and to meet with the same personages too often. Hence, it was wise in Mr. Timbs to sprinkle his spectres sparingly; and to interpose between the numerous halls and castles in which Mary Queen of Scots was confined, those visited by Cardinal Wolsey; these in which Queen Elizabeth was entertained; and those in which Charles I. and Charles II. met many of their fortunes face to face, some such contrasts as he has introduced. Even mysteries, like that of Minster Lovel, or myths, like that of Midridge, or the blind beggar of Bethnal-green himself, are welcome, after a long course of the last-named illustrious personages, unless, indeed, they are graced with startlingly new treatment.

Turning over page after page for a suitable specimen of Mr. Timbs's manner, we light upon this sketch of Fair Rosamond's Bower:—

"In the middle of Oxfordshire there existed from the Saxon times almost to our own age, a Royal palace, fraught with memories grave and gay, and chequered with light and shade of the most picturesque scenery. Not a vestige of the palace now remains; but its site is denoted by two sycamore-trees, whose wide and spreading limbs point amid the solid silence to the spot where kings in days of yore have dwelt. . . . The Bower, or Maze, which the king had built for Rosamond, consisted of vaults underground, arched and walled with brick and stone. It is thought to have existed before the time of Rosamond, and remained after her death, since all pleasaunces, or gardens, in the Middle Ages had this adjunct. . . . How the Queen discovered her is variously told. It is commonly said that 'the Queen came to Rosamond by a clue of threidde or silke, and so dealt with her that she lived not long after.'"

And then Mr. Timbs gives all the other versions of the story known, with an account of Godstow Nunnery, where some authorities state Rosamond was buried; while others affirm she lived as a nun for twenty years after her supposed death. Those who admire our ancient fabrics, and enjoy their legends, will find in the volumes he has prepared a large amount of enjoyment, and will unanimously admit that he has well carried out his object, which he avers was to add to the attractiveness of famous sites and scenes.

NEW BUILDING FOR THE POST-OFFICE, ST. MARTIN'S-LE-GRAND.

THE corner-stone of the new building for the General Post-office, in course of erection opposite Sir Robert Smirke's building, in St. Martin's-le-Grand, was laid on the 16th inst. by the Chief Commissioner of Works, Mr. Ayrton, M.P.

It is stated that the new building will be of four stories, and have four fronts, two each 286 ft. in length—one towards St. Martin's-le-Grand, and the other in Bath-street; and two each 144 ft. long—one in Newgate-street and the other in Angel-street. It will be faced with granite to the height of 5 ft. above the pavement, and the superstructure will be of Portland stone throughout. The first two stories will be ornamented with Doric pilasters, and the two upper stories with Corinthian pilasters. The principal or centre entrance, in St. Martin's-le-Grand, will consist of a Doric portico, surmounted by columns and an entablature of the Corinthian order. The estimated cost of the structure is 129,700*l.* odd. It is being erected by Mr. William Brass, contractor, of Old-street-road, from designs by Mr. James Williams, architect of the department of the Board of Works. The erection of the edifice is under the superintendence of Mr. Trickett.

Mr. Ayrton, in his address, said the new building would be a remarkable illustration of the advantages to be derived from the study of economy, combined with utility, in the erection of a public building. He was happy to add that no edifice had been recently designed in which so much convenience and accommodation would be obtained from so small an expenditure of the public money, yet consistently, at the same time, with such an amount of ornamentation and elegance as was requisite in a public building of that importance. Undoubtedly, it would not present what some people would call the grand features they might expect to see in a public edifice; but it should be borne in mind that the department with which he was connected was not engaged on this occasion in erecting a Grecian temple, but a place of business; and therefore it had sought to subordinate architecture to convenience. However desirous people might be to encourage mere beauty, his department was bound to remember that architecture was not to be regarded as the master of the public, but rather its servant. It might, indeed, be compared to a handmaid of fair proportions ministering to the wants and luxuries of her mistress; but when worshipped, it becomes an inexorable thing, compelling every one to submit to its dictates.

Mr. Ayrton is right in principle, but he must not push it too far. "Fitness, Commodity, Delight," is the order in which the purpose of a building has been wisely stated. The authorities who ignore the last quality altogether will stand but ill with posterity. Moreover, beauty is not necessarily costly:—

"Taste, never idly working, saves expense."

It is scarcely to be denied that the design of the New Post Office, as published, is of a commonplace type. Unless good architectural skill be brought to bear on details, the general proportions, and the profiling of mouldings, we may have a damaging eyesore that will last long years.

THE STATE OF THE STONE RELICS ON IONA.

MR. JAMES DRUMMOND, R.S.A., read a paper, entitled "Notes of Early Monumental Art in the West Highlands," at the last meeting of the Society of Antiquaries of Scotland. He visited Iona, and found the stone relics in a sad state of neglect and decay; indeed, some of them he did not find at all. They had actually been claimed by various persons, on one pretence or another; one because his grandfather had paid seven bolls of barley and seven milk cows for it,—to whom is not said, and no one had any right to sell it:—

"Now, surely [says Mr. Drummond] this system of appropriation ought to be put a stop to, and that by the strong hand; for it is an utter impossibility that the monuments of these old chiefs and ecclesiastics can be the property of these people, many of whom hardly belong to the island. No better illustration could be given of the utter indifference and carelessness, not only of custodiers, but of all connected with this neglected region, whose duty it is to protect from destruction these precious illustrations of monumental art of a bygone time, than the M'Leod memorial stone, over which the turf was allowed to grow; and so thick was this covering, that the very position of it was forgotten; and yet this was one of the interesting and most perfect remaining. Close by this I

uncovered another, over which the turf had been allowed to grow. On it is a cross, a sword, and the usual scroll work. It has often been asked—Is there no way of preserving these invaluable relics? I should say no difficulty whatever, seeing the old order has been departed from; and as no stone is now in its original position, there can be no delicacy in the matter if the powers that be would only move in the matter or sanction some scheme. In such affairs the simplest plan is always the best, and the object would be gained if a simple stone bench, about 1 ft. high and 2 ft. wide, were built round the inside of St Oran's Chapel, and on this, ranged against the wall, the finest of the slabs, those of figures, being placed at the east end, and in front of all an iron rail, to prevent inquisitive people from meddling; but let no sacrilegious hand put a roof on this chapel, as has been proposed. Let the more common specimens lie still inside the barriers."

Mr. Drummond also visited and speaks of the remains in Cantyre and elsewhere.

PROFESSIONAL QUESTIONS.

NORTHERN ARCHITECTURAL ASSOCIATION.

The President of this Association (Mr. Thomas Oliver), in his opening address on the 17th inst.,* said:—Perhaps the most important duty that we have to accomplish—a duty that underlies the entire ramifications of our professional practice—is that of securing public confidence. It would be useless to shut our eyes to the events of the last few years, whether caused by the short-sightedness or conservatism of metropolitan practitioners, or by the craving for change, or the want of information on the part of the public; but to all observing minds it must be evident that a change for the worse has taken place in regard to this most desirable state of things. It is said the late Prince Consort remarked on one occasion that he could get along well enough with civil engineers, but when he came to consult with architects, they almost invariably threw obstacles, such as precedent, in his way. And our present Government has certainly shown in most arbitrary terms and actions their unequivocal intention to throw over precedent, both in the appointment of their professional advisers and in regard to the established customs of such advisers. The cause of this, like the cause of the terrible war now raging on the Continent, will very probably ooze out, bit by bit, as personal quarrels, secret negotiations and apprehensions of individual aggrandisement, develop themselves, through blue-books or otherwise, to the outer world. To ignore the fact, however, will not meet the case; we must meet it face to face. If we have habits to throw off, let us do it manfully; and if we have habits to learn, let us set to work to learn them cheerfully. This, however, we must have, and that is, that the public shall believe in our honour and good faith; shall have confidence in our capability to perform what they require, and shall implicitly trust our word as regards the expenditure of their funds.

Behind the cloud, however, there is even here the silver lining. The public have confidence in our taste. Royal engineers may possess constructive talent "almost amounting to genius," as Mr. Cole remarked of the designer of the hideous structure for the last Great International Exhibition, in Cromwell-road; or ephemeral architects of the Paxtonian school may giantise their one idea, and take the world aback for the moment; but in all cases the cultivated and life-educated architect has to be called in, either to give the artistic touch or illuminate with brilliant colour the ill-proportioned blocks of material, and transform them into that subtle and beautiful thing recognised by all cultivated minds as architecture.

There are two questions at the present time agitating the architectural profession, the first, though least in importance, being the ownership of drawings; and the second, the diploma question.

The question regarding the ownership of drawings involves the question of copyright. As there is no law in our favour, as in the case of book-making and picture-making, those engaged in palace, church, or house making must, I suppose, be content to have their ideas plagiarised, until architecture, as an art, and its application into original forms, becomes looked upon by the public as an invention. Have I not as much right to take out a patent for my original designs for baths and wash-houses, or model chapel design, or convalescent home design, as the person who builds a turret war-vessel, and sells it to the Government; or the person who makes a steam-engine, and disposes of it to a railway company; or a person who makes a chimney-pot, a washing-machine, or a porcelain bath?

The question of the ownership of drawings, however, has two or more phases, two being at the present time prominently before the public.

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The architect, in furnishing to the builder selected by his client, which every architect must do, a copy of the whole of the original drawings and details to work from, actually gives to the manufacturing agent of the proprietor that which he seems to consider his right, viz., the drawings that are practically worked from; and surely if the architect chooses to keep his own copy, the proprietor has no right to claim that copy as his also. Such is the fact, however, and such is the claim that is being made. Doubtless many of the builders' drawings get destroyed and lost, but this is through no fault of the architect. Suppose an architect did not furnish a copy of the drawings, but sent his office copy out for the builder to work from, what position would the proprietor be placed in? The whole of the drawings might be lost, in case of dispute. They could not help being damaged; and as documents forming the most important part of the contract, they would be entirely at the mercy of a too deeply-interested party. I need scarcely say that nothing but confusion would be the issue. Again, if an architect has to give up his own copy of the drawings to the proprietor, in addition to the copy given to the proprietor's contractor, he would, for his own almost necessary future use, have to prepare another copy, making in all three copies, which, I maintain, his present commission or charge would not permit of his doing to be remunerative to him.

* At this meeting, a paper, by Mr. F. R. Wilson, "On Old English Statutes" (to which we shall return), was read. The election of officers also took place. Mr. Wilson, Alnwick, was elected president; Mr. M. Thompson, vice-president; Mr. James Hogg, treasurer; and Mr. F. Charlton, secretary.

ON A NEW METHOD OF PRODUCING DURABLE MURAL PAINTING BY FICTILE VITRIFICATION.

This was the title of a paper read at the Society of Arts, by Mr. Alan S. Cole, on the 14th inst., when Mr. Ayrton, M.P., presided. We must confine ourselves to that portion of it (and the whole was very interesting) which describes the new mode. Mr. Alan Cole said,—

A somewhat new process is now in use by Messrs. Minton, Hollins, & Co. and Messrs. Maw & Co. It is remarkable, as the tesseræ are mechanically produced. The idea of these tesseræ originated with Mr. Prosser, and was worked out by the late Mr. Herbert Minton. They are made by compressing into metallic moulds powdered clay with such a force that the atoms of the clay bind themselves together, and retain the shape of the moulds sufficiently that they can be manipulated and carried to the kilns, where, once fired, they become homogeneous and imperishable bodies. The colours given to these tesseræ are, in the main, produced by metallic oxides, principally oxide of iron. The scale of them is limited to a certain extent, though much progress in making new colours is being effected by Mr. Michael Hollins, head of the firm of Messrs. Minton, Hollins, & Co. To this kind of mosaic I propose to give the name *opus anglicanum*. I believe this term has been applied to certain English needlework. I think it is more appropriately applied to mosaic work than to needlework; so that I trust that some other name may be given to the needlework, as a confusion of names is always to be regretted. And now I get to Mr. Campbell's process, which I suggest should be named *opus fictile pictorum*, and considered as a sub-section of the *opus anglicanum*.

To Mr. Arnoux, the scientific juror and reporter upon pottery shown at the various international exhibitions, I am indebted for many most valuable explanations and notes upon Mr. Campbell's invention.

Adopting the principle of the late Mr. Prosser, in 1840, to which I have alluded, Mr. Campbell produces tesseræ, by compressing a composition of stone and clay into metallic moulds. I have here specimens of such unfired tesseræ. By this means the greatest economy in time and in workmanship is insured. By using ordinary clay in a plastic state, several days must elapse before it becomes dry enough to be placed in the oven. The advantages of this system of compressed dry pulverised clay are so manifest, that it has quite superseded the former modes adopted for the making of tesseræ or tiles. These compressed tesseræ are then removed to the oven, where, by virtue of the components of the material, they become vitreous bodies.

The hexagonal shape was adopted in the first instance at Mr. Ayrton's suggestion. The agglomeration of a regular hexagon produces a network of lines generally accepted as being more pleasing in effect than the union of squares.

Plaques may be formed with facility. These plaques are of small and convenient size, thus rendered free from the ordinary risks of firing large plaques. In the first instance, the tesseræ are cemented at the back by a species of mortar, and then fired. This operation concluded, their surfaces are covered with a stanniferous flux, which fills up any spaces which may occur between the tesseræ. Again, they are fired, and upon issuing from the oven are ready for the artist's use. I must here tell you that each individual tessera is a vitrified body imperrious to any effects of damp. These tesseræ cemented together therefore produce plaques whose nature as one body is identical with the imperishable nature of each of its tesseræ. The cements at the back and the flux on the surface cannot be injured by any atmospheric effects. Thus, I repeat, the plaques are, so far as science of the present day can teach, perfections of imperviousness to any evil effects from damp, dirt, gas, &c. Now, by placing the plaques together, it is obvious, for the artist who likes to have a large space before him, he may thus obtain an acre of tesselated canvas to work upon if necessary.

The artist can make his preliminary blocking-out or sketch with charcoal or pencil, and with the same ease as he effaces his work from canvas can he rub it off the Keramic plaques. When he has completed his sketch, he may then proceed to the colouring of his composition.

The detrimental effects of light upon vegetable colours, the hurtful results of the exposure of colours composed of metallic oxides or their salts, to the action of oxides of carbon, of ammoniacal gases, sulphuric acid, sulphurous acid, and carburetted hydrogen, precluded the adoption of such materials. The use of the various essential oils and varnishes seemed likewise forbidden by the well-known volatile character of such fluids.

Again, the mural paintings, by means of mineral colours, worked with alkaline silicates as a pigment (such, for instance, as have been tried in Berlin some twenty-five years ago), require for their execution considerable practice and study, and a delicate manipulation. This process cannot be said to have yet received the sanction of time, and it appears they have already suffered from their exposure to the atmosphere; at all events, it is not proved that they can resist the action of the nitrate of potash, which the capillary attraction of the wall is sure to bring to the surface.

Thus it will be seen that there seemed to be obstacles in the way of the right species of colours to be used; however, Mr. Campbell's resources have enabled him to contrive a complete palette of vitrifiable colours almost quite similar to the ordinary oil colours. The artist can apply them to the plaques in precisely the same way as he would oil colours to his canvas. The plaques, when painted, are fired, and upon withdrawal, should the artist desire to make alterations, he can do so by painting in his corrections, which may be fired into the composition. The number of firings is quite immaterial, and may be multiplied without damage to the plaques. If you will examine the finished specimen exhibited, you will see that the actual strokes and touches of the artist remain as they do in oil paintings. The texture, if I may so call it, is identical to that of an oil painting. Herein, therefore, is a most valuable feature.

I wish to make one remark upon the durability of the colours. Their nature, like that of the tesseræ, is vitreous. By the heat of the kiln a fusion between the colours and the plaques takes place. The vitreous components in both combine, and the result is an endurable and impervious work.

I would sum up, therefore, the virtues of Mr. Campbell's process thus,—permanent painting, upon a true and level surface, illimitable, if necessary, in its size.

A very valuable discussion followed, in which Mr. Cope, R.A., Mr. E. M. Ward, R.A., Mr. Poynter, A.R.A., Mr. Redgrave, R.A., Mr. J. G. Crace, Mr. Westmacott, R.A., Professor Donaldson, Mr. Fisk, Mr. Hyde Clarke, and the Chairman took part, and which want of space alone prevents us from reporting.

WORK, WORK, WORK!

CIRENCESTER SCHOOL OF ART.

AT the distribution of prizes, last week, in connexion with this school of art, Mr. S. C. Hall delivered an excellent *extempore* address to the students, a portion of which we report. Never, he said, let your time be idly spent when it can be profitably employed. Take my advice, — work, work, work. Consider that idle time is not only evil in its influence and effects, but leaves a seed that will surely have as pernicious fruit as any evil planted on earth can have. My lads, you must consider that every hour of your time, that you can spare from your employment, you must apply to art, which is profitably spent, and not only for its immediate gain, in furnishing and strengthening your minds, but in the actual profit to be obtained at no distant period. Remember that he who is intelligent is sure to make better progress than the man who is stupid. Remember the great advantages foreigners have over us, which is attributable to the education they receive in the art departments, and which is profitable, not only for enjoyment, but for actual pecuniary advantages. The skilled workman is a better workman than he who is unskilled; and his master can afford to pay him a much larger sum than to him who works without intelligence. If you had been through the French manufactories, as I have been, you would have seen that the meanest artisan knew perfectly well what he was about; he was not a mere mechanic, to copy slavishly what was submitted to him, but he thought and considered, and the result was a better design in taste, form, ornamentation, and colour. They produce a better design than we do, with all our energy, and under circumstances always more favourable, excepting that they understand what they are about, whilst we labour on in ignorance of the principles required. It would be only going over the old ground again to tell you that in every position of life art has its charms. There is no man so utterly uncultivated—not even the savage—who does not derive some enjoyment from art. It is the highest recompense of civilisation as it is the largest reward to the uncultivated. But if enjoyment was the only object of art, it would but accomplish a very small portion of its task. It is a very great pleasure and a great teacher, and whether found in the palace or cottage it is sure to bring recompense with it, whenever encouraged. I trust that these boys, however humble, surround their rooms with bits of art, which indeed are silent but valuable instructors. They can easily acquire that which, when I was a boy, cost pounds, or perhaps pennies. Some of the most beautiful engravings are now to be had almost for nothing. I ask you to look at a publication called the *British Workman*, which contains some of the most beautiful works of art. Some large prints in it are so excellent in drawing and engraving that no money can produce better work. You can have to-day the best achievements of the painter multiplied by the engraver, which in my young days were confined only to the wealthy. Get them then, I say, in the name of goodness; surround yourselves with these beautiful things so easily to be obtained. I have every reason to congratulate my countrymen on the change that has taken place in England during the last thirty years. These schools of art are certainly the main instrument to achieve that high and holy purpose which no other science can fulfil; and let us promote it by every means in our power. When you place an illustrated book, or print, before any of your young people or children, you know as well as I can tell you that you are thereby cultivating a taste not only to soften and elevate the mind, but to have an additional comfort and advantage for them. How many of your cottages are decorated with these silent instructors? Show me the cottage that contains some half-dozen or more of these prints, which are to be had for almost nothing, and I will show you a better master of the household, and mistress, too, be it in ever so poor a cottage,—in other words, I will show a father and mother more fit to bring up children than are to be found in many circles of higher society. What influences a desire to enjoy home more than cultivating a love of art? Art is a public instructor, aiding in the virtues taught by the Holy Book. One of the best auxiliaries which a clergyman can have, when he puts a Bible in the hands of his flock, is a love of art. One art will assist others, and it will lend its influence towards virtue, equally with as good effect as any of the teachings a good clergyman can give us. Be not under the impression that you can learn without work, that a lesson is to be acquired without labour: you must do that which other men have done whoever achieved eminence in any position, in any grade or calling. You must remember that toil is the only road to excellence, and that to achieve success you must labour to earn it. My young friends, bear in mind,—and I leave it to you as my legacy,—to work, work, work, with thought; cultivate your intelligence, and do not be satisfied simply to use your hands; but use your brain and cultivate your mind, and you may be sure that the more you think over these subjects the more you cultivate art. I impress upon you to labour to attain eminence in it; the more surely you will be laying up for yourselves prospects of happiness hereafter, not only in the actual recompense distinction will bring to you in the reward of a pleasant and profitable science, but in the reward of your conscience in feeling that you have done that which you ought to do, and to which it has pleased God to call you. I know that among you there are many who are the sons of men in trade here, in this town of Cirencester; I have been told of this and that person whose father and other members of the family are working in trades, and who can only be spared occasionally,—perhaps not for more than an hour in the evenings; but in that time they have undoubtedly shown the good results of work. Well, then, make the most of that time, and be assured that if you do not accomplish all you desired to accomplish, and rise to that eminence which some of your young men have attained at Kensington, each will have his reward according to his degree of merit,—will have a recompense for his thought and labour, well employed and well bestowed.

IN *RE* YEOVIL.

TYPES OF CIVILISATION.

"A WORKING MAN" furnishes a Crewkerne local paper with some fever facts about the villages of Chinnock, and asks what the Nuisance Committee of Yeovil are about? He says:—

"The cottage in which Robert Lacey lives, and where he has lost his wife and one child, besides having had another child and himself attacked very severely, has no less than five privies and a pigstye all within a few yards of the house! One of the privies at the back is touching the house, and has an open cesspool. It is no wonder, therefore, that fever should break out in such a place. It cannot be supposed that the medical gentleman who attends the place has not reported this state of things in the proper quarter. Out of the five cottages at Quarry Farm, three have had fever in them. None of these cottages have back doors, and they are built against a damp hedge. They cannot be healthy, as it is impossible to wash the floors. There are also two cottages at Richay, not far from Lacey's cottage, which are a disgrace to the parish on account of the shameful state in which the poor occupants are allowed to live year after year. They do not appear to have been repaired for thirty years. I venture to say that children who have to live in such wretched places cannot help unlearning what they will learn when put to school. What is the Nuisance Committee of the Yeovil Union doing that some step is not taken towards the spread of this fever? Perhaps, by and by, when some of the richer inhabitants of the place are attacked, some stir will be made."

We may add that the three villages of Chinnock East, West, and Middle, require looking after. They have never, to our knowledge, been long free from disease and sickness; the habitations of the poor out and about the parish are not much better than pigstyes. A little distance north of East Chinnock is the notorious and unfortunately-situated village of Chiselborough, which attracted so much attention some years since. The inhabitants are affected by maladies which are said to arise from the defective ventilation and the mild climate of the neighbourhood. In the year 1851, in a letter to Lord Ashby, Dr. Guggenbühl thus described the inhabitants of the village of Chiselborough:—"Three German feet high, corpulent and bloated, with misshapen heads, turgid lips, and noses flattened like the negro's." Whether the situation of the village in a narrow valley, inclosed by lofty hills, has such an effect on the temperature of the climate, and, in turn, so affects the villagers of Chiselborough as to produce the maladies known as goître and cretinism, we are not prepared to say. But with the additional evils and surroundings that such homes as those which the villages of Chinnock and those in the Yeovil district exhibit, we fear that these repulsive peculiarities will not soon wear out. Dirt is the parent of many crimes, and badly-housed human nature cannot improve in physical strength or moral power. There is no standing still; mankind must either go on improving or deteriorating. Pure air, pure water, in sufficient quantities, and comfortable and well-constructed homes, are the very least requirements that are absolutely necessary for the health and existence of civilised human beings.

THE "CRITERION TAVERN" COMPETITION.

MESSRS. SPIERS & POND proposing to build a tavern and restaurant on a plot of land in Piccadilly, just past the Circus, with a frontage of 79 ft., and extending through to Jermyn-street (a depth of 151 ft.), where the frontage is about half that in Piccadilly, graciously permit fifteen respectable architects, selected from a longer list of suing applicants, to arrange plans and prepare designs, in hope of being appointed to carry them out. In the basement, or lower, the instructions say, there is to be a hall capable of holding 1,000 people, with a gallery and a stage; on the ground-floor, a buffet and dining saloon for 150 people; above these must be a grand hall and orchestra for public meetings and concerts, and the top part of the building is to be prepared for a photographer, and have a fine-art gallery. The cost is to be about 20,000*l.*, exclusive of decorations and fittings. The premiums offered are:—150 guineas for the first best, 100 guineas for the second, 75 guineas for the third, 50 guineas for the fourth; and all the rewarded drawings are to be the property of Messrs. S. & P. No design is to receive a premium unless a contractor will undertake to carry it out for an amount within 10 per cent. of the architect's estimate. The Firm may reject the whole as not meeting their views (their decision is to be final and conclusive), or they may take from one to four of the designs at prices named above and hand it or them to their own architect to carry into execution. If, however, they should think it expedient to select one of the competitors so to act, he is to receive a fee of 1,000*l.*, for which he is also to supply drawings for the decorations, any premium to which he might have become entitled merging into that amount.

This is all very unsatisfactory. We have no desire to find any fault with the respectable firm who have made the offer, and who, as times go, will probably be thought liberal; but look what it really means. By fully carrying out their offer of premiums the proposers may obtain four complete sets of designs and estimates, the pick of a picked fifteen, for much less than they would have to pay any one of the competitors, if employed in the regular way of business, for a single set of designs and estimate,—for less, indeed, than any properly-qualified respectable surveyor would charge for legitimately making an estimate of the cost of carrying out one of the designs selected; and yet there are fifteen architects, or firms of architects, who think themselves lucky in being allowed to buy a ticket, and at a heavy price, too, in this lottery, which, after all, if Messrs. Spiers & Pond please, may be a lottery of all blanks.

DISTRIBUTION OF PRIZES, SOUTH KENSINGTON.

THE Lecture Theatre at the South Kensington Museum was well filled with the pupils and their friends on the 16th inst., when Sir Francis Grant, P.R.A., distributed the prizes to successful art students of the South Kensington District Schools. Mr. Barchett, the head-master, read a report, and called up the students one by one to receive the rewards obtained:—

"Since the last distribution of prizes eight students had been recommended from these schools for admission to the Royal Academy, and a total of twenty-two had been admitted by drawings made in these schools. Besides the regular prizes and distinctions, occasional prizes had been offered by the department and by manufacturers during the year, some for general competition, and some only for this school. By the Department 23*l.* were offered, in eleven prizes, for fans, the competition being limited to female students. Eleven students of this school competed, sending in fifteen designs, and Misses Montalba and Brooks obtained the first and third prizes, to the value of 7*l.* The Worshipful Company of Plasterers offered prizes of 25*l.* for designs for a 'capital of a pilaster' and a 'diaper for wall decoration,' limiting, however, this school to one subject. Two students, Messrs. Galli and Marshall, obtained the prizes of 8*l.* 8*s.* and 5*l.* 5*s.* respectively. A prize of 5*l.* was offered by Mr. M'Crum, of Milford, Armagh, Ireland, for designs for table damask. For this there were twenty-six competitors and thirty-four designs. The prizes were won by Messrs. Marshall, Wilson, and Nunn. Prizes of 2*l.* 2*s.* and 1*l.* 1*s.* were offered for the decoration of a tramway car. Thirteen designs were made, and the prizes were obtained by Messrs. Claussen and Harris. A steady and progressive success continued to mark the career of the school in which these honours and rewards had been won."

The gold medallists were Mr. A. F. Brophy, Mr. G. Claussen, and Mr. T. M. Rook; and two of them had won gold medals on the last occasion. The prizes presented to them were large shields in electrotype; and Mr. Cole, C.B., explained that an arrangement had been made whereby the successful gold medallists were at liberty to have an electrotype copy of that great work of art, the shield purchased at the Paris Exhibition by the State. Mr. Redgrave, in the course of some remarks, pointed out that the judges, in making their awards, did not look so much at the finish of any works as their truthfulness to art principles. He reminded the students of the coming Exhibition, and urged them to prepare works for that.

Amongst the lady students Miss Kate Karr, Miss M. Mansell, Miss E. Montalba, and Miss F. L. Sothern, took silver medals.

Sir Francis Grant, in the course of an earnest address, with which the proceedings closed, spoke of the coming exhibition of works of the Old Masters at Burlington House as being likely to exceed in value and interest the first. In past times England had certainly lagged behind the nations of the Continent in taste and skill, studying the useful to the neglect of the ornamental, but things were now changing. He had been greatly pleased with what he had seen in the schools, and more especially to observe that painting in monochrome had not been lost sight of.

BURLINGTON HOUSE.

On turning over the leaves of a book, entitled, "Round about Piccadilly and Pall Mall," by Henry B. Wheatley, and published during the current year,—a book as amusing for its fiction as for its facts, I find at page 67, in an elaborate, but by no means accurate, account of Burlington House, the following extraordinary jumble:—

"Samuel Ware, the architect of Chesterfield House, who had been apprenticed to a chimney-sweep when a boy, was the architect employed by Lord George Cavendish."

The nobleman here referred to was Lord George *Henry* Cavendish, who came into the bulk of the fortune, about 800,000*l*., of his relative, Henry Cavendish, the chemical philosopher. With this handsome sum, although not stated in the book, his lordship acquired Burlington House, about the year 1818, and determined to restore it in a thorough and princely manner. For this purpose, he certainly did select Samuel Ware, F.R.S., F.S.A., &c., surveyor to the Duke of Portland, and architect to the Duke of Devonshire, who frequently employed him at Devonshire House, and at Chiswick, but never at Chatsworth, where Wyatville ruled the day. So much for the fact; now for the fiction. Chesterfield House was built in 1748, long before Samuel Ware was born, or thought of. This is admitted at p. 205 of the same work, where Isaac Ware is stated to be the architect. But how about the jumble? I have read the paragraph quoted over and over again, and for the life of me I cannot make out whether the author intends to convey the idea that "Samuel Ware," or "the architect of Chesterfield House," was "apprenticed to a chimney-sweep, *when a boy!*" But in faithful remembrance of my past master, Samuel, I beg most emphatically to deny that such apprenticeship refers to him. He was the son of a leather factor in St. John's-street, having a handsome villa in Southwood-lane, Highgate, and associating with the Longmans and other wealthy members of his class.

By dint of great talent, industry, and excellent judgment in his investments, Samuel Ware accumulated a large fortune, the bulk of which he bequeathed to his nephew, Mr. Charles N. Cumberlege, who has assumed the name of Ware.

If old Isaac Ware, whose folio on Palladian Architecture I well remember, was ever among the sweeps, and dancing on May-day, I should like to know. I do not believe it. I cannot conceive how a mind so brought up should be able to design and carry out such a beautiful work as the façade of Chesterfield House, which even Samuel in all his glory never accomplished. Can some of your readers enlighten me on this point?

Samuel Ware had the good taste not to meddle with the architecture of the grand court of Burlington House, or with the Piccadilly wall, except putting a new iron railing in front; but he reconstructed the back front, put on a new roof containing numerous bedrooms (not shown in Mr. Wheatley's engraving), and altogether spent about 50,000*l*. on the works. The grand staircase was wholly his, the proportions of which have been much spoilt by the present R.A.s; so also were the ceilings, decorations, and gilding, which I refer to because the author actually states that they were so well done by the original architect, about 120 years ago; that the learned society which took possession of the grand ball-room was agreeably surprised to find that the gilding only wanted a little cleaning to bring it out as fresh as ever it was in Lord Burlington's time.

Can any one imagine that Lord G. H. Cavendish spent so large a sum and contented himself with whitewashing his ceilings? No. They were Mr. Ware's. So were the chimney-pieces and stoves, the carved doors, pediments, skirtings, shutters, &c.

It is not correct to state that Mr. Ware's first proceeding was to take "*sketches*" of the house. Every architect will see that this is an absurdity. The most accurate plans, sections, and elevations were taken, and are still in existence, in possession of Mr. C. N. Ware, who, I trust, will present them to the Institute.

Burlington Arcade was a "happy thought" of Mr. Ware's, though not for the purpose of giving employment to young females, as stated. It was designed solely with the object of shutting out the hundreds of windows in Old Bond-street, which flanked the whole extent of the gardens, destroyed their privacy, and created an intolerable nuisance. The outlay amounted to about 30,000*l*., and the first letting produced his lordship 14 per cent., besides curing the evil of which he complained. Drawings were subsequently made for the erection of a solid screen wall on the east side of the garden, in order to shut in the windows of the chambers in the Albany; but, after many interviews with the parties interested, this scheme resulted in a compromise, whereby the Albany retained some light and air, but no possibility of view over the ground, and his lordship avoided a large, unproductive outlay.

Henry Baker, F.R.I.B.A.

EXHIBITION IN AID OF THE FRENCH PEASANTRY.

We mentioned the endeavours that were being made to collect works of art as contributions in aid of the distressed peasantry of France. The collection is now on view in three of the galleries of the Society of British Artists, Suffolk-street, together with a number of pictures lent by the Queen, the Duke of Wellington, Miss Coutts, and others. Some of these are of rare interest, —"Christ on the Mount of Olives," by Raffaelle, and Lady Eastlake's "Virgin and Child," by Bellini, for example,—and the collection, as a whole, is remarkably interesting. Some very charming works have been given by their respective authors, and a large sum (above 1,800*l*.) has already been realised by sales.

THE STRENGTH OF SLATE.

Sir,—In reply to the inquiry of "A Mason," I should say that a good sound slate slab, of the dimensions given, and supported as described, would bear any weight that could practically be laid upon it. Experiments have shown that, to break slabs of equal dimensions, it required:—For Yorkshire stone, 2 cwt. 2 qr. 22¼ lb.; for slate, 11 cwt. 1 qr. 25 lb. Slate has also been found to bear a greater pressure than any of the granites. Although I have registered the results of many experiments upon rectangular slabs, I fear the problem now propounded is so difficult, complicated, as it is, through the slab being round, and a hole being cut in the centre, that no one could estimate the exact weight it would carry. To give some idea of the great strength of slate from the best quarries, I will quote one example. A 2 in. slab, 2 ft. 9 in. wide, with 2 ft. 9 in. bearing, was weighted uniformly, and the breaking-weight was found to be 9 tons 8 cwt.

Alfred Beaby.

You printed in the *Builder* of last week the results I sent you of some experiments made on the strength of slate slabs. Allow me to apply them to the inquiry made by "A Mason." It was found that with slabs self-faced on both sides, the co-efficient *c* was 2·25; for slabs self-faced on one side, and planed on the other, the co-efficient was 2; and for slabs sawn out of a block, 1. There was a difference also in the strength of slate from different quarries, but those above given were of the strongest kind.

The practical conclusion I draw is, that if the slab of slate described be of a quality corresponding with the first of those above named, a safe load for it would be 18 cwt.; if with the second, 15 cwt.; or if with the third, 7½ cwt.

With materials of the strength of which we have extensive knowledge, as of timber and iron, a fourth, or even a third, in some cases, of the breaking weight may be a safe load; but with such a material as slate, it might not be safe to reckon upon more than a fifth.

C. S.

THE BLOCK-BOOKS.

As the many questions of interest connected with these celebrated books have once more attracted public attention, with a view, I trust, to their being finally settled, I have ventured to believe that notwithstanding the subject may be familiar to the greater number of your readers, there may nevertheless remain many among them to whom the "Block-books" still remain a mystery, and to whom, therefore, a concise explanation of their object and meaning, as well as the principal points in dispute relating to them, may be acceptable. For the purpose, therefore, of affording that information, I will now state what is meant by the term "Block-book," as well as mention the main questions in difference between the upholders of the old system and myself, and upon the correct solution of which the future position of the "Block-books" in literature will mainly depend.

A "Block-book" consists of an indefinite number of sheets of paper, upon which are impressions taken by means of a block of wood, upon the surface of which letters or engravings, or both, have been carved or cut, and from which, by pressure or friction, any required number may be printed at an exceedingly trifling expense.

The number of these books now known to us is very limited, and, with very few and trifling exceptions, they relate to religious subjects. The three principal and most important of them, however, are ordinarily recognised and described as the "Biblia Pauperum," the "Canticum Canticorum," and the "Speculum Humanæ Salvationis;" and whenever any difference of opinion has heretofore arisen in connexion with "Block-books," it has almost invariably been in immediate relation to one or other of these three works, which may therefore, for all practical purposes, be accepted as the representatives of the system of "Block-books," and by the true date of which, when ascertained, all the rest will necessarily be bound, as being altogether secondary to the principal works I have mentioned. So far I believe I am correct in stating that no difference of opinion exists; but here we reach the point of divergence.

The advocates of that I have called "the old system" have positively insisted that the "Block-books" are the production of the beginning of the fifteenth century (some of the most enthusiastic among them having, indeed, even ventured to declare they were known in the latter part of the fourteenth century), and that they consequently led up to and preceded "printing with movable types."

I, on the contrary, utterly deny this theory, and insist that printing with movable types preceded the "Block-books," as well as engraving on wood in Europe, and (notwithstanding the dates which appear upon certain of those "Block-books") I affirm that literature is unable to prove the possession of a single "Block-book" prior to 1486, in any of the numerous public libraries which then existed in Europe; without which proof I have (those which I believe to be) good and substantial reasons for utterly discarding all "dated" Block-books prior to the period I have named.

Thus this dispute now stands; and impugning the statements so promulgated by the professors of the old system, of which Mr. J. Noel Humphreys and Mons. J. Th. Berjeau are the latest representatives in England, I have, on such grounds alone, selected them as being among the best calculated to uphold it, and have therefore appealed to them to publicly state the authorities upon which they rely as a justification for the several positive declarations that "Block-books and wood engraving" preceded "printing with movable types," which appear in the works they have respectively published on the subject.

Henry F. Holt.

MR. EDMUND SHARPE, M.A., *Author of "Architectural Parallels."*

BEDFORD DRINKING-FOUNTAIN.

A handsome drinking-fountain was generously and unostentatiously given to the town of Bedford last week. The foundation consists of a bed of concrete, 18 ft. square, and 4 ft. deep; upon this are placed three tiers of York steps, the upper one forming a landing, 2 ft. wide, on which rests an octagonal basin, 9 ft. in diameter, cut and moulded out of Portland stone, with dog-troughs projecting from the sides, and from the centre of this basin rises the superstructure in Ancaster stone, which is designedly monumental in character, and 23 ft. in height, square on plan. This is intersected by an upper octagonal basin, 6 ft. in diameter, which serves as a filter, and divides the superstructure into upper and lower portions. Each side of the lower portion is formed into a panel, with moulded and crocketed gablets, enriched with ball-flower ornament, the apex terminating with richly-carved finials, and the bases united by deeply-cut foliated bosses supported on polished Aberdeen granite columns, with moulded bases and carved capitals. The spandrels of this compartment are filled in with diagonal diaper work. All the upper portions of the panels are ornamented with inlaid work, majolica tiles, and polished marble bosses. From the north and south panels project jets of wrought metal, to which drinking-cups are attached. On the east panel the following Scripture is incised:—"Jesus answered and said unto her, Whosoever drinketh of this water shall thirst again: but whosoever drinketh of the water that I shall give him shall never thirst; but the water that I shall give him shall be in him a well of water springing up into everlasting life." (John iv. 13, 14.) On the west the following Scripture:—"In that day there shall be a fountain opened to the house of David, and to the inhabitants of Jerusalem, for sin and for uncleanness." (Zechariah xiii. 1.) "And let him that is athirst come. And whosoever will, let him take the water of life freely." (Revelation xxii. 17.)

The outer edge and soffit of the upper basin is composed of a large O G moulding, decorated with cut pateræ and conventional carving. The upper portion of the monument is formed with panels, similar to the lower, with gablets, buttresses, and finials; the whole terminating in a pyramidal form, with handsome wrought metal finial. The water is laid on from the main with tin-cased lead pipes, and passes from the higher jets into the upper basin, where it is filtered, and thence through the lower jets into the large basin, and afterwards into the dog-troughs.

The whole structure is Gothic, and in character with the work of the fourteenth century, and occupies a prominent position at the south-east corner of St. Paul's-square. The total cost is about 200*l.*, which has been defrayed by a professional gentleman of the town. The architect is Mr. John Usher, Bedford. The mason, Mr. John Hinton; the plumber, Mr. George Small; the carver, Mr. Willis; and the metal-work is by Messrs. Hart, Son, Peard, & Co., London.

COMPETITION.

Gateshead.—In reply to the advertisement for designs for Gateshead Congregational Church and Schools, fifty-five designs were sent in, and the premium has been awarded to the one bearing the motto, "Labor et Spes," by Mr. Pritchett, of Darlington.

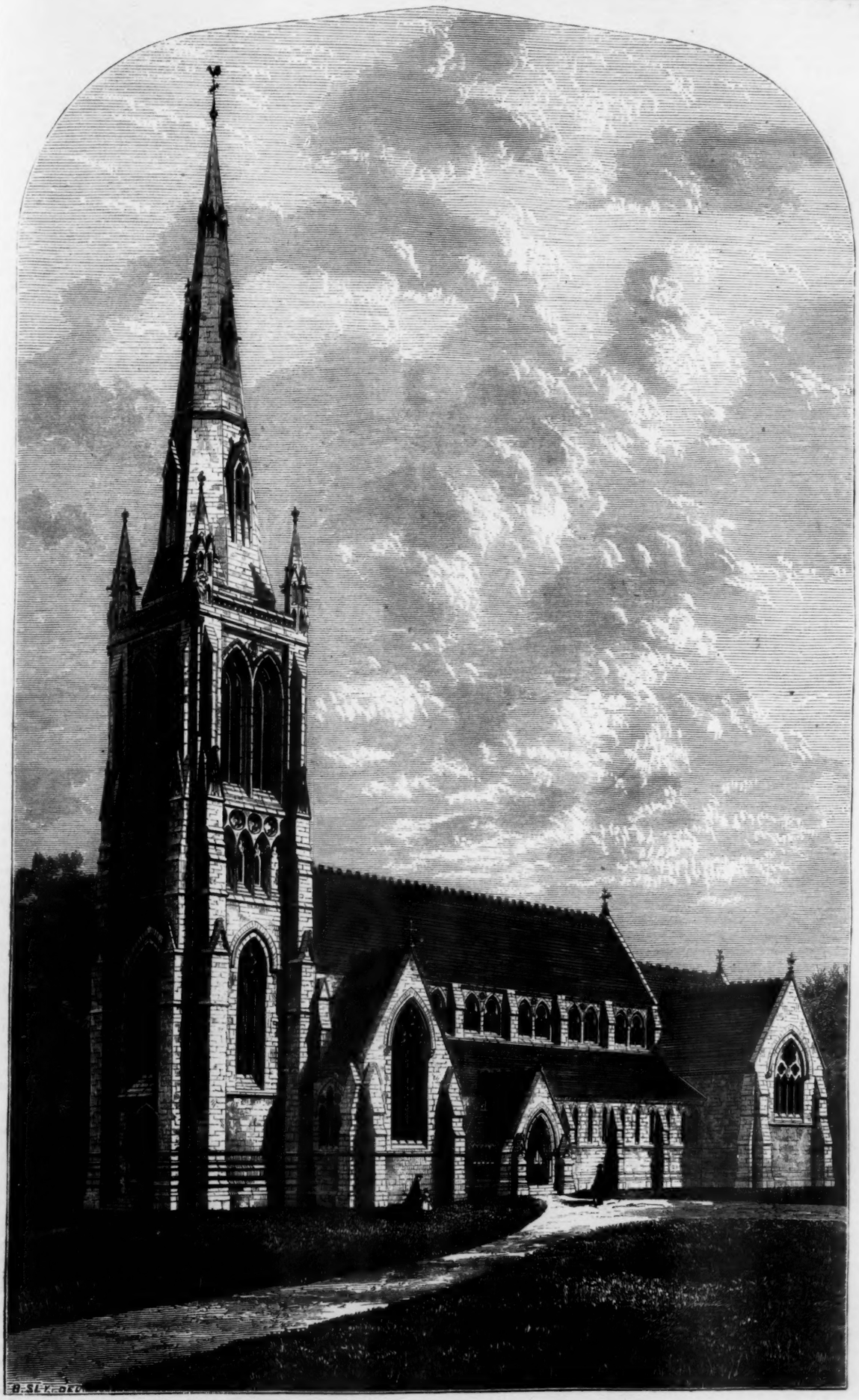
ST. PETER'S, BOURNEMOUTH.

St. Peter's Church, Bournemouth, has been built in the old-fashioned way of building by degrees. First of all, a south aisle was added to a poor modern chapel of ease, then a north aisle, then a clearstory: so that the old chapel gradually disappeared. After this, in the year 1863, a very costly chancel with aisles was built. This is groined in stone, and has a sumptuous painted and sculptured reredos, the walls on each side of it being lined with charmingly-designed groups of angels painted on tile by Messrs. Morris & Marshall. On each side of the eastern bay of the chancel are double screens of marble and alabaster, which form two ranges of sedilia. The two aisles on each side of the choir seats are occupied by lofty metal screens, which, as well as the chancel screen, are the work of Mr. Leaver. In the wall on the north side of the chancel is a sculpture of the Crucifixion, whilst opposite to it is a sculpture of the Annunciation, and over the vestry door another of the Charge to St. Peter. The vestry, on the east side of the north transept, is three stories in height, with a newel staircase. Below is the heating chamber, on the church level the clergy vestry, and above this the choir vestry. Almost all the windows throughout this part of the church are of stained glass, and most of them executed by Messrs. Clayton & Bell.

Latterly it has been found that the church was not large enough, and an addition of a somewhat novel kind is now proposed by the architect; viz., a western transept, beyond which is a steeple. The steeple is already built up to the top of the tower, at a cost of about 4,800*l.*, and the western transept will, it is expected, soon be built, so as to connect the steeple with the church. The tower is 25 ft. by 25 ft., and 103 ft. high to the top of the parapet. The height of tower and spire will be 188 ft. The lower stage is groined in stone, and the belfry is being provided with a heavy peal of bells, cast by Messrs. Taylor, of Loughborough.

A large churchyard cross, with sculptures on the base, and a lych-gate, of stone and oak, are also being erected in the beautiful churchyard. The extreme length of the church, when complete, will be 180 ft.

The contractors for the tower, which is now just completed, are Messrs. Dove, of Islington. The whole of the work, with the exception of a portion of the south aisle wall, has been done from the designs of Mr. G. E. Street, A.R.A.



ST. PETER'S, BOURNEMOUTH.——MR. G. E. STREET, A.R.A., ARCHITECT.

REFUGEES' BENEVOLENT FUND.

WE have a very strong impression that England has now done enough in aid of the wounded victims (French and German) of the war. Probably not less than 400,000*l.* has been sent out of the country for this purpose, in one shape or another. Some of it has been wasted or misapplied; but much misery has, nevertheless, been relieved by its means; and what have the sacrifice and our neutrality brought us from abroad? The abuse, if not the hatred of both countries. However, we have done our duty, and that may be our reward. An enormous amount of distress exists in our own country, and we ought now to look at home. If Germany and France are insane and wicked enough to go on cutting one another's throats, on them the punishment must fall. We advocate no further subscriptions of money to send abroad. We would say one word, however, in favour of the fund originated by Mr. Francis Bennoch, to aid those refugees who have reached this country. Great distress prevails amongst them, and we shall be glad if we induce any of our readers to assist the society. Would that England could see her way to any steps likely to bring about peace. As "F. B." writes to us, and we endorse:—

O Europe, lift your mighty voice,
And bid the carnage cease!
From out thy sea-walled citadel,
O England, plead for peace!
Plead for the helpless, homeless ones,
Childhood and hoary years;
Plead for the orphan's piteous cry,
The wailing widow's tears!

Republic, Council, Kaiser-King,
Forget not this DECREE!
Each loving life your lust destroys,
Heaven will demand of thee!
Command, O GOD, Thou King of Kings!
Break angry passions down;—
That PEACE, and LOVE, and BROTHERHOOD
May all the nations crown!

THE PLANNING OF SMALL HOUSES.

ON two recent occasions have the weaknesses and discomforts of the small suburban houses been pointed out in your columns. It must not, however, be overlooked that with such meagre materials, and in such a restricted area, it is a very difficult task to attain under such unfavourable circumstances to a favourable result. Where in another case a foot or two of space either in contraction or augmentation is of no account, and the occurrence of an unpremeditated vacuity may be easily shaped into a useful cupboard, in this it means discomfort and an unprofitable space. There, a not altogether unwished-for superfluity of service may make the condensation of work, or the amount of it, immaterial; here service is an encumbrance, and its amount and economic condensation are of the utmost importance.

The hindrances to perfect planning are not diminished if we have to design, in addition for "one (according to "S. H."), who, in spite of moderate means, must and is determined to be a 'gentleman.'" In fact, in the whole range of architects' duties, I know of none more difficult than this undertaking. Another cause of failure is that the solution of this difficult problem is attempted by those who, from their associations and training, are not competent to decide on the specialities of a "gentleman's" abode. In these small houses, to insure domestic comfort the isolation of the service is of even more importance than in larger houses, where it can be placed at a distance. The unpleasantness of constantly crossing the path of a cantankerous cook with a month's warning, and at such close quarters, is very great. Nevertheless, I think the attempt to improve this class of house should be made, and, were the result satisfactory, would pay well. The plans are only measurably and not sufficiently studied in its relation to the frontage, and the capability this affords even by a slight extension of enhancing the comfort of a house. A piece of ground is parcelled out into plots, with frontages, say of 15 ft., 25 ft., or 30 ft., why not into ones of 17 ft. 6 in., or 28 ft., or 31 ft., if by so doing an uncomfortable house could be rendered comfortable? The increase in the ground-rent would be unappreciable. Property would become more valuable if greater brain power were expended on it, than if the value be measured by the amount of bricks and mortar, &c., that has been accumulated on it. Most of these plans seem to have been projected on india-rubber, and by the application of an ingenious process exhibited a few years since, by a more or less amount of stretching, may be made to do duty now for a 25 ft., now for 35 ft. or 40 ft. frontage, as desired. The moderation in the amount of rent one wishes to incur depends not on the simplicity of your demands, but on the amount of discomfort you are willing to put up with in living in the reduced rooms and offices of a larger house. Man differs from the lower orders of creation in nothing more than in this, that whereas the type of dwelling of these has ever remained stationary, and has never varied from that form dictated by their original instincts, that of man has developed concurrently with his progress from having had everything originally but size in common with the inferior creatures, it has arrived at such a phase of development that every function, meal, duty, pleasure, business, originally carried on in the same space, has now its separate sphere. The utilitarian has developed into dining and breakfast rooms, &c.; the ornamental or social into drawing, ball, and music rooms, boudoirs, picture and sculpture galleries; business into study, library, offices, &c.; the claims of decency into numerous bedrooms; the primitive fire-heat for household purposes into the kitchen, with its elaborate apparatus for cooking, scullery, and a host of subordinate offices. As regards the preservation of health, from no sanitary regards or conveniences into w.c.s, soil and water drainage, baths and washhouses, infirmary, and so on. Now a man, in building or choosing a house, should clearly indicate to what extent he wishes this principle of development to be carried out in it, beyond what the requirements of our social life now absolutely demand. For example, if he be a man with a large family and moderate means, or of moderate means without the large family, he will require but the simplest utilitarian accommodation; with more means more of the social and ornamental will be required; and so on for a variety of combinations to suit every degree of taste from simplicity to luxury, which wealth or its absence might dictate. What I would, therefore, advocate would be, to start from the cottage and develop it to a greater or lesser extent to suit the purse or the requirements of all, in preference to contracting a larger plan in its rooms and offices, and squeezing us all indiscriminately into it. We should then have some diversity and variety in domestic life instead of the present uniformity. What wonder, indeed, there should be uniformity: we live in similar houses, among similar furniture, in similar rooms with the same patterned paper; read the same papers and books from the circulating library; all come home by the 4·40 or 5 o'clock train; in fact, we do our utmost to make one the counterpart of another. J. I.

GENERAL CONDITIONS FOR BUILDING CONTRACTS.

AT a meeting of the London Builders' Society held December 20th, 1870, it was unanimously resolved as follows:—

"That the members of this Society do agree that after the 1st of February, 1871, they will not tender for any works in competition, the quantities of which have not been taken out by a surveyor agreed upon by the builders, at a meeting of the competitors.

They further agree that they will not sign any legal contract for works obtained in competition that does not contain a full and fair arbitration clause.

They also agree that no contract shall be undertaken by any one of them which has been declined by any member of the metropolitan building trade, on account of its containing inequitable conditions, unless the committee of Builders' Society shall decide that the objectionable conditions may reasonably be assented to.

That the general conditions for building contracts, based on the agreement of this Society with the Royal Institute of British Architects be recommended for general adoption."

The general conditions are subjoined.

1. The contractors are to provide everything of every sort and kind which may be necessary and requisite for the due and proper execution of the several works included in the contract according to the true intent and meaning of the drawings and specification taken together, which are to be signed by the architect and the contractors, whether the same may or may not be particularly described in the specification or shown on the drawings, provided that the same are reasonably and obviously to be inferred therefrom, and in case of any discrepancy between the drawings and the specification the architect is to decide which shall be followed.

2. The contractors are to conform in all respects to the provisions and regulations of the Metropolis Local Management Act and the Metropolis Buildings Act, and to the regulations and by-laws of the Metropolitan Board of Works and of the local authorities, and they are to give all notices required by the said Acts to be given to any local authorities, and to pay all fees payable under any of the said Acts to any such authorities or to any public officer in respect of the works.

3. The contractors are to set out the whole of the works and during the progress of the works to amend on the requisition of the architect any errors which may arise therein, and upon request are to provide the necessary appliances or furnish the necessary vouchers to prove that the several materials are such as are described. The contractors are to provide all plant, labour, and materials which may be necessary and requisite for the works, all materials and workmanship being the best of their respective kinds; and the contractors to leave the works in all respects clean and perfect at the completion thereof.

4. Complete copies of the drawings and specification signed by the architect are to be furnished by him or by the measuring surveyor to the contractors for their own use, and the same or copies thereof are to be kept on the buildings in charge of a competent foreman, who is to be constantly kept on the ground by the contractors, and to whom instructions can be given by the architect. The contractors are not to sublet the works or any part thereof without the consent in writing of the architect.

5. The architect is to have at all times access to the works, which are to be entirely under his control. He may require the contractors to dismiss any person in the contractors' employ upon the works, who may be incompetent or misconduct himself, and the contractors are forthwith to comply with such requirement.

6. The contractors are not to vary or deviate from the drawings or specification, or execute any extra work of any kind whatsoever, unless the same be required to comply with any of the provisions of any of the Acts of Parliament, regulations, or by-laws hereinbefore mentioned, or unless upon the authority of the architect, to be sufficiently shown by any order in writing, or by any plan or drawing expressly given and signed or initialled by him, as an extra or variation, or by any subsequent written approval signed or initialled by him. In cases of day-work, all vouchers for the same are to be delivered to the architect or clerk of the works at latest during the week following that in which the work may have been done, and only such day-work is to be allowed for, as such, as may have been authorised by the architect to be so done, unless the work cannot from its character be properly measured and valued.

7. Any authority given by the architect for any alteration or addition in or to the works is not to vitiate the contract; but all additions, omissions, or variations made in carrying out the works for which a price may not have been previously agreed upon, are to be measured and valued, and certified for by the architect, and added to or deducted from the amount of the contract, as the case may be, according to the schedule of prices annexed, or where the same may not apply at fair measure and value.

8. All work and materials brought and left upon the ground by the contractors, or by their order, for the purpose of forming part of the works, are to be considered to be the property of the employer, when payment shall have been made of the amount of any certificate in which the value thereof shall be included, and in such case the same are not to be removed or taken away by the contractors or any other person without the special license and consent of the architect; but the employer is not to be in any way answerable for any loss or damage which may happen to or in respect of any such work or materials, either by the same being lost or stolen, or injured by weather or otherwise.

9. The architect is to have full power to require the removal from the premises of all materials which in his opinion are not in accordance with the specification, and in case of default the employer is to be at liberty to employ other persons to remove the same without being answerable or accountable for any loss or damage that may arise or happen to such materials; and the architect is also to have full power to require other proper materials to be substituted; and in case of default the employer may cause the same to be supplied, and all the costs which may attend such removal and substitution are to be borne by the contractors.

10. Should any of the works be, in the opinion of the architect, executed with improper materials or defective workmanship, the contractors are, when required by the architect during the progress of the work, forthwith to re-execute the same, and to substitute proper materials and workmanship, and, in case of default of the contractors in so doing within a reasonable time, the architect is to have full power to employ other persons to re-execute the work, and the cost thereof is to be borne by the contractors.

11. Any defects, shrinkage, and other faults which may appear within months from the completion of the building, and arising out of defective or improper materials or workmanship, are, upon the direction of the architect, to be amended and made good by the contractors at their own cost, unless the architect shall decide that they ought to be paid for the same; and, in case of default, the employer may recover from the contractors the cost of making good the works.

12. The contractors are to insure the building against loss or damage by fire, in an office to be approved, in the joint names of the employer and contractors for half the value of the works executed until it shall be covered in, and thenceforth until completion, in three-fourths of the amount of such value, and are, upon request, to produce to the architect the policies and the receipts for the premiums for such insurance. All moneys received under any such policies are to be applied in or towards the rebuilding or reparation of the works destroyed or injured. In case of neglect, the employer is to be at liberty to insure and deduct the amount of the premiums paid from any moneys payable to the contractors.

13. The building, from the commencement of the works to the completion of the same, is to be under the contractors' charge; they are to be held responsible for, and are to make good all injuries, damages, and repair, occasioned or rendered necessary to the same, by fire or by causes over which the contractors shall have control, and they are to hold the employer harmless from any claims for injuries to persons, or for structural damage to property happening from any neglect, default, want of proper care, or misconduct on the part of the contractors, or of any one in their employ, during the execution of the works.

14. The employer is at all times to have free access to the works, and is to have full power to send workmen upon the premises to execute fittings and other works not included in the contract, for whose operations the contrac-

tors are to afford every reasonable facility during ordinary working hours, provided that such operations shall be carried on in such a manner as not to impede the progress of the works included in the contract, but the contractors are not to be responsible for any damage which may happen to, or be occasioned by, any such fittings or other works.

15. The contractors are to complete the whole of the works (except painting and papering, or such other works as the architect may desire to delay), within calendar months after the commencement of the same, unless the works be delayed by reason of any inclement weather, or causes not under the contractors' control, or in case of combination of workmen, or strikes, or lock-out affecting any of the building trades, for which due allowance shall be made by the architect, and then the contractors are to complete the works within such time as the architect shall consider to be reasonable, and shall from time to time in writing appoint, and in case of default, the contractors are to pay or allow to the employer as and by way of liquidated and agreed damages, the sum of £ per week for every week during which they shall be so in default, until the whole of the works (except as aforesaid) shall be so completed, provided the architect shall in writing certify that the works could have been reasonably completed within the time appointed.

16. If the contractors shall become bankrupt, or compound with or make any assignment for the benefit of their creditors, or shall suspend or delay the performance of their part of the contract (except on account of causes mentioned in clause 15, or on account of being restrained or hindered under any proceedings taken by parties interested in any neighbouring property, or in consequence of not having proper instructions, for which the contractors shall have duly applied), the employer, by the architect, may give to the contractors or their assignee or trustee, as the case may be, notice requiring the works to be proceeded with, and in case of default on the part of the contractors or their assignee or trustee for a period of days, it shall be lawful for the employer, by the architect, to enter upon and take possession of the works, and to employ any other person or persons to carry on and complete the same, and to authorise him or them to use the plant, materials, and property of the contractors upon the works; and the costs and charges incurred in any way in carrying on and completing the said works are to be paid to the employer by the contractors, or may be set off by the employer against any money due, or to become due, to the contractors.

17. When the value of the works executed and not included in any former certificate shall from time to time amount to the sum of £, or otherwise, at the architect's reasonable discretion, the contractors are to be entitled to receive payment at the rate of 80 per cent. upon such value until the difference between the per centage and the value of the works executed shall amount to per cent. upon the amount of the contract, after which time the contractors are to be entitled to receive payment of the full value of all works executed and not included in any former payment, and the architect is to give to the contractors certificates accordingly; and when the works shall be completed, or possession of the building shall be given up to the employer, the contractors are to be entitled to receive one moiety of the amount remaining due, according to the best estimate of the same that can then be made, and the architect is to give to the contractors certificates accordingly, and the contractors are to be entitled to receive the balance of all moneys due or payable to them under or by virtue of the contract within months from the completion of the works, or from the date of giving up possession thereof to the employer, whichever shall first happen. The contractors are to be entitled to receive any sum reserved for painting and papering or otherwise, on the completion thereof. Provided always that no final or other certificate is to cover or relieve the contractors from their liability under the provisions of Clause No. 11, whether or not the same be notified by the architect at the time or subsequently to granting any such certificate.

18. A certificate of the architect, or an award of the referee hereinafter referred to, as the case may be, showing the final balance due or payable to the contractors, is to be conclusive evidence of the works having been duly completed, and that the contractors are entitled to receive payment of the final balance, but without prejudice to the liability of the contractors under the provisions of Clause No. 11.

19. If the employer shall make default in paying any moneys to which the contractors may become entitled, for days after the amount thereof shall have been certified, or if the works be delayed for months by or under any proceedings taken by any other parties, the contractors are to be at liberty to suspend the works, and to require payment for all works executed, and all materials wrought up, and for any loss which they may sustain upon any goods or materials purchased for the works, and in such case the contractors are not to be bound to proceed further with the works contracted for. The contractors are to be entitled to such interest and at such rate as the architect shall certify upon all moneys payable to the contractors, payment of which may have been unduly delayed.

20. Provided always that in case any question, dispute, or difference shall arise between the employer, or the architect on his behalf, and the contractors as to what additions, if any, ought in fairness to be made to the amount of the contract by reason of the works being delayed through no fault of the contractors, or by reason or on account of any directions or requisitions of the architect, involving increased cost to the contractors beyond the cost properly attending the carrying out the contract according to the true intent and meaning of the signed drawings and specification, or as to the works having been duly completed, or as to the construction of these presents, or as to any other matter or thing arising under or out of this contract except as to matters left during the progress of the works to the sole decision or requisition of the architect under Clauses Nos. 1, 9, and 10, or in case the contractors shall be dissatisfied with any certificate of the architect under Clause No. 7, or under the proviso in Clause No. 15, or in case he shall withhold or not give any certificate to which they may be entitled; then such question, dispute, or difference, or such certificate, or the value or matter which should be certified, as the case may be, is to be from time to time referred to the arbitration and final decision of* , architect, or in the event of his death or unwillingness to act, then of* architect, and in the event of his death or unwillingness to act, then of an architect, being a Fellow of the Royal Institute of British Architects, to be appointed on the request of either party by the president for the time being of such Institute, and the award of such referee is to be equivalent to a certificate of the architect, and the contractors are to be paid accordingly.

* The Council of the Royal Institute of British Architects require that this blank should be filled in with the name of a Fellow of the Institute.

MUSIC AT THE ALBERT HALL.

Sir,—The extremely interesting article on the Royal Albert Hall, in the *Builder* of Dec. 10th,—interesting both in regard to practical and artistic considerations,—contains one or two remarks as to the probable future success of the building as a grand music-room, to which I should like to add one or two observations, especially with reference to the large organ which is to be placed there.

It is observed in your article that the "peculiarly hard character of the cement and scagliola used" is among the elements of acoustic success. I think this perfectly true with regard to singing, and especially as to the possibility of *solo* voices being distinctly heard. Everything which promotes reverberation is usually an element of success with regard to the effect of a single voice in a large hall, as it thereby gathers an artificial power and fulness of tone which it would not otherwise appear to possess when heard in such a large area. This reverberation would not probably prove detrimental either to the effect of a full band, save perhaps in somewhat exaggerating the effect of the brass instruments as compared with the strings; the most powerful and brilliant sounds always of course drawing forth also the most distinct and marked echo. But in regard to the organ, the question is rather a serious one. In the town from which I write (Liverpool), a large organ, by the same maker who is to build, or is building, the Kensington organ, is placed in a large hall, also remarkable for the hardness of the materials of which its walls and floor are composed, and for its consequent ready and prolonged reverberation. Now, the effect of this upon the multitudinous and powerful pipes used in the full organ, is such as, in the majority of cases, to cause a hopeless confusion of sounds, to such an extent that an elaborate organ fugue becomes in many cases a mere undistinguishable Babel of sound, even to those to whom every bar of the music is familiar. Even the crowding of St. George's Hall with a large audience does but partially modify this serious drawback to the enjoyment of the very high class of organ performances given there; and it was once proposed to hang with draped curtains the recessed arches which flank each side of the room, in order, if possible, to swallow up some of this superabundant flood of sound. Judging from the description of the materials forming the interior of the Albert Hall, it appears to me but too likely that the same result will occur there to mar any organ performances which may be given.

In your remark as to the generally "brassy" and harsh sound of modern large organs (which an eminent musical critic has described as "absolutely surgical to the ear"), I fully concur. This effect in modern organs arises in great measure from the different proportions in which the two classes of pipes used in an organ are balanced in the present day, compared with what formerly prevailed. An organ commonly contains two distinct classes of pipe,—the "flue-pipes," which are the typical form of organ pipe with a mouth or "lip" in front, the aspect of which is familiar to every one; and the "reed-pipes," shaped commonly like an inverted cone, and in which the quality and the pitch of the note depend mainly on the vibration of a metal tongue placed at the mouth of the pipe, the pipe itself merely giving volume and resonance to the sound thus produced. Now, the first class, the flue-pipes, produce what we know as the characteristic organ tone, which is distinct in its nature from any other musical effect; the reed-pipes have always what may be termed a "brassy" or trumpet-like tone and *timbre*, and are, in fact, in general more or less successful imitations of brass or "reed" instruments, such as the trumpet or clarionet.

In the older school of organs the flue-work was always made the basis of the whole, and formed by far the larger portion of the instrument, the reeds (where they were not used for special purposes, as "solo stops"), merely serving to blend with and strengthen the combined effect of the full organ. In most modern organs the flue-stops are, indeed, still made the basis of the instrument, but the number and power of the reed-stops is much augmented, to such an extent that in many large organs the reed tone, when the full organ is used, quite overpowers the flue tone, and the instrument becomes more like a gigantic harmonium than like what used to be formerly recognised as an organ; the reeds being often placed on a heavier wind than the other stops. The style of playing and "registering" (*i. e.* combining the stops) is also changed, and from some of our cleverest and most able organists we rarely get the pure tone of the flue-pipes at all, but hear scarcely anything but reeds. One cause of this change in the method of playing is the modern ambition on the part of organists to make their instruments imitate the orchestra, and to play on it marches, overtures, and arrangements from symphonies, &c., which are foreign to the real genius of the instrument; and instead of genuine organ music, which is a branch of musical art standing by itself, and distinct from anything else, we get only what is, after all, but a poor imitation of what an orchestra would do much better. It is for this imitation, however, and for the achievement of a hard metallic brilliancy of effect that the modern predominance of reed-stops is required; and I fear that no one has done more to supply and, at the same time, foster the demand for this style of instrument, than the talented organ-builder who is understood to be entrusted with the building of the new Kensington organ. This is perhaps a very natural weakness, inasmuch as Mr. Willis has produced reed-stops probably superior in power, equality, and brilliancy to those of any other maker, ancient or modern, for which let him have all the credit due to him; but there may be too much of a good thing, and if those who have the direction of matters in connexion with the Albert Hall would endeavour to influence their organ-builder (if it is not now too late) to give them something more like an "organ," pure and simple, and less like an imitation of a combined brass and reed band than some that he and others have erected, the result would probably be more satisfactory, both æsthetically and practically. For this question also bears upon the result with regard to echo in a large building; as, in a band, it is the trumpets and trombones which chiefly draw for an echo in the building, so in an organ it is mainly the powerful reed-stops that contribute to the confused and confusing echo which destroys the effect of full organ pieces of any elaboration; and an organ more assimilated to the old school of instrument, with more of flue-pipes and less of reeds than is now getting common, would probably be better heard, and "define" more clearly, in such a room as the Albert Hall, than an erection filled with gigantic overblown "trumpets," "tubas," and "trombas," more calculated to frighten than to please an audience.

H. H. S.

FURTHER REPORT UPON GRANITES.

Having on the 26th of June, 1862, reported "upon the various kinds of granite suitable for paving and road-making," and an article thereon appearing in the *Builder* of 12th November, 1870 (p. 902), and a letter by Mr. G. Hodson, with tables of crushing stress, specific gravity, &c., in the *Builder* of 10th December, 1870 (p. 989), I beg further to report:—

That there are self-evident typographical errors in the last two columns of the table showing the "crushing stress," the first of which gives the force in tons instead of pounds, and the second in tons and decimals of a ton, instead of thousands of tons.

That I most fully endorse Mr. Hodson's assertion, both as regards paving and macadamising, viz. "that the safest test to apply is that of durability;" and that the only sure way to apply this test, "is by practical experiments with the respective kinds of material, laid down at the same time, upon a continuous length of roadway."

That the following allegation cannot be accepted, viz., "that the specific gravity of any stone or rock is a general measure of its hardness or resistance to crushing stress;" but, on the contrary, the *hardness* of a stone has very little to do with its specific gravity, and certainly its *hardness* has nothing to do with its power to resist crushing stress: thus quartz, flint, and some trap-rocks, are the hardest, and yet in many cases the weakest of road materials.

That for nineteen years as town surveyor of Cambridge, I had opportunities of proving repeatedly, that the specific gravity of a rock, *per se*, is no measure of its resistance to crushing

stress; for whereas the Mountsorrel and Markfield granites are both excellent macadamising stones, yet the Bardon Hill, which has a higher specific gravity than Mountsorrel, and nearly the same as Markfield, is very inferior to both.

That in a printed table circulated by the Charnwood Granite Company, showing the resistance to crushing stress of various granites, as certified by Mr. Kirkaldy, it is shown that Guernsey granite crushed at a pressure of 15,062 lb. per square inch, which is far below that of the other granites. If, therefore, the crushing stress is any guide to the quality of the material, then Guernsey granite is weaker than any of the Leicestershire granites, while its specific gravity is 2·841, or a very little heavier than Markfield syenite, which, according to Mr. Kirkaldy, is capable of sustaining about one-third more pressure. This theoretical result is useless to any practical man who has metalled roads and paved streets with Guernsey and Leicestershire granites, and finally disposes of the specific gravity theory as applied to road materials.

That I find from practical experience that the quality which gives strength and durability to road metal is *toughness*, not *hardness*, and that the former quality may be found in rocks with either high or low specific gravities.

That in my Report to the Improvement Commissioners of Cambridge, above quoted, I showed that the intrinsic value of Guernsey granite is much greater than any of the Leicestershire granites, but that the cost of carriage effectually prevents its adoption for places any considerable distance north of London.

That I do not question the honesty and accuracy of Mr. Kirkaldy's tests. Doubtless they are correct as far as they go, but the fallacy lies in presuming that a steady pressure by machinery on a perfectly plane surface will give a result which shall be an index of the probable behaviour of the same material when subjected to the ever varying conditions of two years' exposure to frost, sun, and water, under the wear and tear of the traffic on a town street or turnpike-road.

R. REYNOLDS ROWE, M. Inst. C.E.

BUILDING GRANTS FOR SCHOOLS OF ART.

THE following information will be interesting to those who are looking forward to the probability of a grant. The regulations are in accordance with the Minutes of the Science and Art Department, revised to May, 1859, and are published by order of the Committee of Council:—

Preliminary.—1. The Lords of the Committee of Council on Education, believing that the provision of a suitable building is essential for giving permanence to local efforts in establishing a School of Art, and that no part of the fees received for instruction should be absorbed in payment of rent, are prepared, subject to the conditions hereinafter set forth, to aid in:—(*a.*) Erecting suitable buildings for Schools of Art. (*b.*) Erecting suitable rooms as parts of, or additions to, buildings to be used for other purposes. (*c.*) Purchasing suitable building already erected. 2. All applications for building grants towards the erection of Schools of Art must be addressed to the Secretary of the Science and Art Department, South Kensington, London, W. 3. All applications for grants out of the Parliamentary Vote for any year must be sent in on or before the 15th of November in the year preceding. 4. No grant will exceed 2*s.* 6*d.* per square foot of internal area, and no grant will exceed 500*l.* 5. No grant will be made unless their lordships are satisfied:—(*a.*) That there is a population in the neighbourhood which requires a School of Art. (*b.*) That the School of Art is likely to be maintained in efficiency. 6. The site, plans, estimates, specifications, title, and trust deed, must be satisfactory to the Committee of Council.

The Site.—7. A plan of the site must be forwarded, drawn to a scale of 1-8th of an inch to a foot, and showing the boundaries, approaches, and abuttals. 8. The site must be:—(*a.*) In situation, not unhealthy, nor noisy. (*b.*) Within convenient distance of the home of the students. (*c.*) In tenure, fee-simple, without incumbrance or rights reserved over the surface, or reservation of minerals.

The Plans.—1. The following dimensions are suggested as affording adequate provision for accommodating fifty students. Proportionately increased accommodation must be provided for greater numbers. (*a.*) One elementary room, 20 ft. by 80 ft. This room should be east and west, it should be not less than 16 ft. high, and should be lighted from above. (*b.*) One painting-room, 20 ft. by 15 ft. This room should be lighted from the north side, and should have a top light in the roof *over* and in continuation of the side light. (*c.*) One modelling-room, 20 ft. by 15 ft. (*d.*) One master's room, 12 ft. by 15 ft. This room should also be lighted by a side light, from the north if possible. (*e.*) One cloak-room for females, 12 ft. by 18 ft. 6 in. (*f.*) A kitchen and bed-room for the attendant, each 12 ft. by 10 ft. (*g.*) The rooms for study, except that which is specified in section *a*, should be not less than 15 ft. high to the wall plate, if ceiled flat, or 12 ft. high to the wall plate if ceiled to the collar beams or to the common rafter. (*h.*) The windows should be large, free from mullions or small panes. (*i.*) The class-rooms should, as far as possible, communicate with each other directly as well as by passages. Where there are more stories than one, the staircase should give access to all rooms without passing through rooms; also to cloak-rooms, lavatory, &c. The arrangements for lighting with gas, for warming, drainage, &c., should be complete. The rooms should be well ventilated by the admission of air at the floor level, with an ample outlet above. (*k.*) Water-closets, urinals, and a lavatory must be provided; the accommodation for female students must be separate. (*l.*) The external walls of the school, if of brick, should not be less than one brick and a half in thickness; and, if of stone, not less than 20 in. in thickness. All the roofs must be either tiled or slated. Gutters and drains to carry away the roof water must be provided. (*m.*) If the roof be unceiled to the tie-beam or collar-beam, there must be ceiling to the rafters. Rooms which are top-lighted should in all cases be ceiled to the common rafters, in order to give increased height; and all tie-beams or other heavy roof timbering should be avoided, and iron tie-rods used where practicable. 10. In the case of the purchase of buildings already erected, they must be certified by an officer of the Department to be suitable in all respects for the purposes of a School of Art. 11. The plans (with specification and estimate) when approved and sealed, may be returned to the promoters for use, but must be lodged in the Science and Art Department before a grant is paid.

There are other clauses with reference to trust deeds and payment of grants, &c.

CAUDEBEC LADY CHAPEL.

SIR,—Mr. Papworth does not explain the seeming impossibility of which I spoke; he only transfers the responsibility of it to some one else's shoulders.

That Mr. Pugin actually measured the voussoirs of this vault I cannot understand, seeing that he must have had it taken down to do so. That he is approximately correct in his drawings there is not much doubt, the geometrical principles on which the vault is designed being so very evident.

One has only to look at the section shown on page 1012 of Mr. Papworth's edition of Mr. Gwilt's Encyclopædia to become aware of all the difficulties attending such a piece of measurement.

JOH. B. COMEN.

DEFECTIVE DRAINAGE OF WESTMINSTER.

SIR,—The Royal city is far behind the commercial centre of our great metropolis in respect of its sewerage. Passing the other evening from Charing Cross towards Westminster Bridge, I met with three huge oceans of muddy water between Scotland-yard and Richmond-terrace, which had formed along the kennel on the left-hand side of the road to the depth of 4 in. or 6 in.; and through which the *crawlers*, unhired cabs, seemed to take delight in splashing their way, thereby inundating the footpath, and sprinkling the pedestrians.

It appears that this unpleasant effect is always produced when a heavy rain falls about the time of high tide; and the anomaly is, that the evil has much increased, so it is said, since the construction of the main-drainage works along the Victoria Embankment.

It is truly marvellous to find such a gross nuisance permitted in this leading thoroughfare; in close proximity to our chief Government offices, and adjoining the private residences of some of the chief magnates of our land.

A. H. GENT.

THE NEW WORKHOUSE AT ST. ERMIN'S HILL, FOR WESTMINSTER.

AT the usual meeting of the St. George's, Hanover-square, Union Board of Guardians, on Wednesday, Mr. H. H. Seymour, in the chair, a report was read from a special committee respecting the purchase of land at St. Ermin's-hill, for a new workhouse. The report recommended that negotiations for the purchase be re-opened, and that a piece of land in Snow's Rents be secured. Colonel Haygarth moved the adoption of the report, and said it was a question of 250*l.* The committee, who had offered 1,750*l.* for the land, were now asked 2,000*l.* for it. Mr. Doughty seconded the motion, observing that it was very desirable to secure the piece of land. Mr. Scudamore objected to the building of another workhouse, and moved as an amendment that no further steps be taken at present; Mr. Fleming seconded. Mr. Mitchell also objected to the new house, and remarked that the expenses of the Union were increasing year by year. The Chairman observed that the old Board of Guardians had bought the land at St. Ermin's-hill to build the new house, and it would be very desirable to have this piece of land in Snow's Rents. Mr. Doughty added that, under the orders of the Poor Law Board, the Guardians were bound to build the house. After this Mr. Scudamore withdrew his amendment, and the report was adopted.

THE TRAFALGAR GRAVING DOCK.

SIR,—Touching Mr. Redman's remarks respecting the Trafalgar Graving Dock at Woolwich, I regret very much having stated that the idea of a dock was abandoned, seeing that a noble one has been constructed on the spot referred to.

Mr. Walker was called in by the Admiralty in 1835 at my recommendation, on the failure of Mr. Ranger's concrete dock, which was caused by his consenting to lower the floor of the dock (after it was constructed) 4 ft., whereby the springs prevailed.

Mr. Walker observed, "Nothing but a granite dock will do," and made designs for the same, which I understood were carried out so far as specifications and preparation for a contract. I was then informed, on what I considered reliable authority, that the idea of a dock was abandoned. I have not seen the spot since.

I have no doubt that Mr. Walker, or rather the Board, hesitated to encounter the expense of a granite dock.

But in 1838 it appears, as so well described by Mr. Redman, that Mr. Walker again visited the yard with Sir Charles Adam and Mr. Laing; the dock was resolved upon, for which he prepared the contract drawings and estimates. The contract being taken by Grissell & Peto, amounting to "some 80,000*l.*"

While I again express my regret at my inaccurate statement, I am glad to have given Mr. Redman the opportunity of describing how a first-rate granite dock should be, and was, constructed from his drawings, estimates, &c.

I may also express the great regret generally felt that this fine dockyard, with its noble and useful buildings and long river frontage, should be abandoned, as the public papers announce it is, seeing that in all probability it may or will be again required.

"THE OCTOGENARIAN."

ARCHITECTURAL INSTRUCTION AT THE ROYAL ACADEMY.

IN a letter which I addressed to you three weeks ago I promised to send the particulars of the proposed course of instruction in the architectural classes of the Royal Academy, when determined upon by the council of that body. I am now authorised to state them in general terms, premising at the same time that as the establishment of this school (the first of its kind in this country) will be necessarily attended by certain difficulties with which experience alone can make us acquainted, modifications may be introduced where found requisite.

The instructions I forwarded to you referred only to the preliminary drawings to be sent in by each applicant. These, with the certificate mentioned, will be submitted to the council; if deemed satisfactory, their authors will be admitted as probationers to study in these architectural classes and to attend the lectures on anatomy, painting, sculpture, and architecture. The lectures on perspective will be attended by probationers only when there is sufficient room for them and the students as well.

When admitted to the architectural classes, the probationers will be expected to execute one drawing shaded in Indian ink, one drawing from the cast, and one complete architectural design within the six months, and towards the end of this term to attend at the Academy on two days (to be fixed beforehand). On the first day they will have to execute a design of a subject which will be given at the time, and be of such a nature as to be easily worked out in six hours: on the second day, a portion of this design will be drawn to a larger scale, and a time-sketch, made in three hours, of some piece of ornament from the round. All these drawings will be submitted to the council, and if deemed satisfactory the probationer will be admitted as a student of the Royal Academy for seven years. In the event of a probationer not succeeding the first time, he will be allowed to continue his studies as before. The classes will be held on Tuesday, Wednesday, and Friday evenings, from 6 p.m. to 8 p.m.

COURSE OF INSTRUCTION.

Probationers.

1. Architectural Drawing.—The delineation of some of the best specimens of antiquity, either Classic or Gothic; first in line drawing, and then shaded in Indian ink in graduated and flat tones.

(This is the universal method adopted in France and Germany, to acquire care and accuracy in drawing, and power and facility in the use of the brush. Its main object, however, is to enable the student to recognise in a geometrical drawing the relative value of the various projections either of the wings, or masses of the building, or of cornices, string-courses, or other decorative features, without being obliged to have recourse to a perspective drawing.)

2. Drawing from the Ornamental Cast.

3. Architectural Design.—A subject will be given out two months or six weeks, and worked out at home; the drawings will be submitted once a week to the master; taken home, and altered after his criticism. At the end of the two months or six weeks, finished drawings, not too elaborate, will be brought back, and sent in as probationers' work.

Students.

1. Architectural Drawing.—Similar to probationers' work, except that the shading will not be from copies as before, and the geometrical projections of shadows will be taught.

2. Drawing from the Ornamental Cast.—(Same as before, except that, as architects' drawings are only the means of communicating certain forms to the sculptor or carver, they should not be too elaborately finished, but, though carefully drawn, rapid and effective.)

3. Architectural Design as above, but of a higher class.—(Here, as with probationers' work, text-books will be pointed out to the student, in which he may find the best examples of the particular style of his design. Some o these books will be kept in the architectural room for reference; as, for instance,—Stuart and Revett's Athens, Blouett's "Baths of Caracalla," Brandon's "Analysis of Gothic Architecture," Viollet le Duc's "Dictionnaire Raisonné," Letarouilly's Rome, and Sauvageot's or Berty's Renaissance of Francis I., &c.)

As experience may dictate, the following courses will be introduced:—

4. A course of study, consisting of the delineation and projection of vaulting and groining from the early barrel vaults of the Romans, tracing its development through the Middle Ages down to the sixteenth century.

5. An occasional course, in which designs will have to be worked out in accordance within certain perfected styles.

6. An occasional course, involving the restoration of portions of certain well-known examples of antiquity.

(These two courses, archæological in their tendency, are adopted in France by the professors of the schools there, their object being to instil into the student's mind

an academical knowledge of precedent as the best foundation for the acquirement of a knowledge of architectural design.)

7. A course of composition in ornamental design.

The medals will be awarded as before. These are as follow:—

A gold medal and a scholarship of 25*l.* tenable for two years, for the best architectural design worked out at home.

A travelling studentship of the value of 100*l.* for one year, for the best architectural design executed in one month in the Architectural Class-room of the Royal Academy.

A silver medal for the best series of measured drawings of some building; and in alternate years, in addition, a silver medal, with books.

And a silver medal for a perspective drawing and a specimen of sciography.

It is to be hoped in future that the competitors will be more numerous. There was only one competitor for the silver medal for measured drawings this year, and none for the perspective medal; while the books of the Academy show that, during the last seven years, from 25 to 28 per cent. only of the students have ever competed. Now, however, that the Academy have placed the architectural students on the same footing as the painter or sculptor, there is no reason why the number of competitors in both classes should not be equalised.

R. Phené Spiers,
Master of the Architectural School of the Royal Academy.

SCHOOL FOR FIFTY CHILDREN AND RESIDENCE FOR TEACHER, FOR 160*l.*

Sir,—There has been built in my parish of Wysall' Nottingham, for the sum of 160*l.*, a school for fifty children, with residence attached, and offices. The dimensions are as follows:—

School.—Length, 25 ft. 3 in.; width, 16 ft. inside; walls, 11 ft. high; roof open, 17 ft. high. The school contains four windows, 5 ft. high by 4 ft. wide. There are also porch and chimney. The floor is boarded.

The House.—Two lower rooms: Front, 12 ft. 6 in. by 11 ft.; kitchen, 12 ft. 6 in. by 6 ft. 1 in; height, 8 ft. Bedrooms: Front, 13 ft. by 11 ft., with recess in addition. Back, 9 ft. by 8 ft.; height, 8 ft. 6 in. All the outer walls are 14 in. thick. There is ample room for pantry under staircase. There are separate offices, with dust-bin between, not yet finished.

The whole material and workmanship, and proper painting for the above, have been found, and done for 160*l.* The parishioners do carting without charge. I am architect and clerk of works. Mr. William Bryans, of Wysall, is builder. It is so important to assist parishes to build voluntary schools, that for twenty-four stamps I will send two photographs of building, with printed specifications and instructions.

John Parker, Vicar of Willoughby and Wysall.

"MEMBERS OF THE INSTITUTE AND THE PROFESSION."

Sir,—In reply to "E.'s" inquiry, whether "taking payment from builders" is an infringement of the rules of the Institute, I beg to refer him to the sheet of "professional practice and charges of architects," published by the Royal Institute of British Architects. The concluding paragraph is in these words,—"It is not desirable that an architect should supply to builders quantities, on which to form tenders for executing his design; but, in case of such being done, it should be with the concurrence of the employer, and the architect should be paid by him and not by the builder." Thos. L. Donaldson.

Sir,—A question was put to me a short time ago, which I was unable to answer; I therefore venture to ask for the required information. Is it usual to insert the following clause in specifications:—"The builder to pay to the architect the sum of (in the present instance) six guineas for the preparation of contract, and for copies of drawings and specification to attach to same, to be paid by builder at the time of execution of contract?" I think it is a pity that the name of the enterprising traveller by railway into Pembrokeshire every fortnight should be withheld from the public. X. Y. Z.

DOMESTIC CHAPEL, SANDBECK PARK.

A new domestic chapel has been built at the north end of the mansion at Sandbeck Park, the seat of the Earl of Scarborough.

The body of the chapel is 22 ft. wide by 51 ft. long, the chancel and apse being 21 ft. 6 in. long by 15 ft. wide. The structure is from the designs of Mr. Ferrey, F.S.A., architect, and is of the Early English style, and built of the beautiful stone from the Roche Abbey quarries. There is a north porch and doorway for the tenants and others, and on the south side an entrance for the family, visitors, and domestics. The nave is divided into four bays, lighted by handsome couplet windows on the north side, filled with glazing, and arranged in geometrical patterns. The roof is of massive pitch-pine timber, ornamented with pierced spandrels, &c.; the principal trusses and purlins being carried upon bold stone arches, with deeply-sunk mouldings, each arch supported by attached triple wall-shafts, the capitals and corbels carved. In the western gable there is a circular window, with radiating mullions, filled with painted glass, by Hudson, of London. Beneath is a small oblong window, in which is preserved some glass from the old domestic chapel, painted by a former Lady Scarborough.

The west end is peculiar in its arrangement, there being a small stone gallery carried upon projecting corbels in connexion with a stone arcade, and treated as a constructional part of the building. The owner enters this gallery from a door on the south side, communicating with the private apartments.

The chancel-roof is wagon-headed, and ornamented with carved ribs, springing from small columns at each angle of the chancel and apse, the whole coloured, studded with stars on a blue ground, and the larger spaces filled with the Evangelists' emblems. At the springing of the ceiling is the following inscription:—"Erected to the Glory of God, and in memory of a beloved Son."

The five lancet windows contain painted glass by Ward & Hughes, of London. Under there is an ornamental wall arcade, having shafts of Derbyshire marble. The chancel arch is lofty, carried on marble columns, which are supported by corbels elaborately carved. The floor of the chancel is laid with encaustic tiles, enclosed in geometrical devices of Derbyshire marble; the chancel steps are of black marble.

The stone pulpit stands at the north corner of the nave, which is fitted up with open benches of pitch pine, the gangway being laid with encaustic red and black tiles.

The chapel makes a handsome feature at the north end of the garden terrace, the apse and small bell-turret on the east gable of the nave forming an agreeable group. The roofs are covered with green Coniston slates, and the general facing of the walls is of rough stone laid in random courses, which contrasts with the dressings of Roche Abbey stone.

HEAT AND DAMP.

Sir,—1. What is the best method, other than the use of felt, of obviating the effect of sun's heat on the roofs of houses when building?

2. Is a bed of concrete under the floor effectual in keeping down damp likely to rise when building on a clay soil, or is there a better plan?

D.

*** An air-space between the outer covering and inner lining of roof is the best moderator. Whitewash on the slates or tiles (in the case of farm buildings, &c) serves to lessen the effect of sun's heat.

A bed of good concrete under floor will keep down damp: a layer of asphalte on a thin bed of concrete does so more effectually still.

THE LATE MR. PATRICK M'DOWELL, R.A., SCULPTOR.

Mr. Patrick McDowell, R.A., the eminent sculptor, has just died, aged 71. He was elected Royal Academician in 1846, and had just resigned his fellowship before he died. He was a native of Belfast, where he was born on the 12th of August, 1799. His father having met with some reverses of fortune, he at the age of eight was sent to a small school in Belfast, where the first tokens of his genius displayed themselves in the direction of art by the copying of such models as chance threw in his way. At twelve he came to England with his mother, who apprenticed him to a coachbuilder in Hampshire; but the bankruptcy of his master set him free, and, fortune having made him acquainted with a French sculptor, he found an opportunity of improving his talent. He could hardly have been of age when we find him engaging a studio near Euston-square, and setting up as a sculptor on his own account. After some previous attempts, which were only partially successful, he made his first essay on an ideal subject, which he took from Moore's "Loves of the Angels." The first commission with which he was entrusted for a group in marble was from Mr. E. S. Cooper, formerly M.P. for Sligo. The subject was Cephalus and Procris; and the conception and style of execution were such as to fix at once Mr. M'Dowell's position in the world of art. The work which fully established his fame, however, was his charming figure of "A Girl Reading," which was afterwards repeated for the late Lord Ellesmere. He had scarcely completed his first large group for Mr. Beaumont, when that gentleman, desirous that the sculptor should visit Italy, supplied him with the necessary funds. After an absence of eight months, he returned to England and completed his "Love Triumphant." To this succeeded "A Girl at Prayer," "Cupid," "Early Sorrow," "Psyche," "The Death of Virginia," and "Eva," all of which formed leading attractions in the International Exhibition of 1851. In 1846, Mr. M'Dowell was entrusted by the late Sir Robert Peel with the execution of one of the national statues of British Admirals (Lord Exmouth) for the decoration of Greenwich Hospital. He also executed those of Pitt and Chatham for the House of Lords.

THE TRANSVERSE STRENGTH OF STONE.

Sir,—"A Mason," or any other person who has the information, would greatly oblige myself, and no doubt many of your readers, if he could give some formulæ for calculating the *transverse* strength of stone slabs and beams of, say, the various descriptions of Yorkshire stones and the oolites most commonly used in London building. In all the tables to which I have access I can find nothing else than the *crushing* strength of stone columns. H. A. C.

CITY OF LONDON UNION NEW OFFICES COMPETITION.

Three designs have been selected from those sent in. A writer in the *City Press* says:—

"One of these designs shows a board-room no more than 40 ft. by 30 ft., and this for the accommodation of ninety-three guardians, the public, and the press.

A second design shows the Assessment Committee-room, where appeals will be held, no more than 17 ft. by 16 ft., while there is no separate waiting-room and clerk's office, as required by the conditions to be attached to this committee-room, unless a little box partitioned off the general office can be called a clerk's office.

The remaining design has a board-room on the second floor (the real first floor being dubbed a mezzanine). There is no waiting-room for the public, who will have to stand on the landing outside the board-room door. The committee-room is 15 ft. by 12 ft. 6 in. The access for guardians to the relief committee-rooms is by going out of doors, across a dark public passage, and through one of the rooms into the other."

Ancient lights will stand greatly in the way of the realisation of some of the designs.

THE PROFIT AND LOSS ACCOUNT OF THE PUBLIC HEALTH.

We have often pointed attention to the actual money loss to the community incurred by defective or bad sanitary arrangements. The following remarks by the *Times* on this subject, while drawing attention to Mr. Simon's report to the Privy Council, merit quotation.

Sanitary reformers are now impeded in their work chiefly by ignorance; and to obtain and diffuse knowledge of the conditions of spreading of local epidemics would certainly remove many of the local difficulties in the way of reform. In a few years it will be possible to show that the prevalence and fatality of every disease bear a distinct relation to the presence of local conditions; that a row of cottages draining into their own wells causes an annual expenditure in poor-rates nearly equal to the absolute value of the property in fee-simple, and that it would pay the parish to buy them and pull them down, if the erections of others with like defects could be prevented. It is only by pressing home facts of this class in the districts where they occur that the waste of lives and money incidental to our present laxity will be made apparent to any general body of ratepayers; and there can be no doubt that a proper appreciation of this waste will be the first step towards much-needed reform. A county or union sanitary Board, charged with investigating the facts about the presence and the effects of nuisance within its jurisdiction, would certainly in no long time bring the public mind to a practical sense of the enormity of those evils which sanitarians with one consent deplore, but which uninstructed people are too apt to consider either mythical or unnecessary. The average middle-class inhabitant of a

provincial town cannot now be made to believe that several hundreds of his neighbours die unnecessarily every year,—as much murdered by the absence of the care necessary to preserve human life in communities as if they were hanged in the market-place as sacrifices to the genius of incompetence. But when it is made apparent that typhoid fever, or scarlet fever, breaks out in several successive years in the same tramps' lodging-house; going always to the same row of cottages; that it follows the onward course of the brook into which these cottages drain; that on reaching the house of the laundress it starts afresh to visit the whole circle of her customers; that it produces every year an aggregate of so much mortality and of so many cases and days of sickness; that it leaves so many widows and orphans, so many lame and blind, to be maintained at the public cost; and that this sequence of events is invariable,—the result not of accident, but of law; surely the most typical *épicier* will in time arrive at the conclusion that the lodging-house, and the related cottages, and the polluted brook, are costly and hurtful luxuries, and that money will be well laid out in modifying or abolishing them. In this way, and probably in this way only, will it be possible in no long time to obtain a sanitary law that will at once be an adequate expression of scientific knowledge and a natural growth of public opinion. All that can as yet be done is to provide a machinery by which the required knowledge can be collected and diffused, and by which any powers that may hereafter be conferred may be efficiently and discreetly exercised.

A "LIGHT AND AIR" CASE IN CHANCERY.

THE case of Ladyman *v.* Grave, in which the plaintiff sought an injunction against the defendant for having built some back walls of cottages so as to obstruct "ancient lights," has been heard before Vice-Chancellor Stuart, in Lincoln's-inn. The plaintiff is Mr. Samuel Ladyman, of Portinscale, Crosthwaite, Cumberland; and the defendant is Mr. John Grave, the Mayor of Manchester. It appeared that the defendant built certain cottages, the walls of which were raised to such a height as to obstruct the plaintiff's light. The question before the Court was whether the plaintiff had the "ancient lights" that he sought to protect. Voluminous evidence was gone into, and the Vice-Chancellor, in giving judgment, said the case was attended with very great difficulty, both in law and fact. Upon the evidence, it seemed to him that the weight of evidence was in favour of the plaintiff, and that the defendant had not proved that there was a unity of possession within twenty years after the house was completed before the filing of the bill. Cases had been quoted to prove that it was necessary for plaintiff to prove enjoyment of access of light for twenty years next before that on which the bill was filed. His Honour was of opinion that that applied only to cases within the statute of William IV., and not to cases of lights that had become "ancient lights" by an enjoyment for the prescribed period anterior to the passing of the statute. If that were so, then the plaintiff had established his case. His Honour was satisfied that it had not been proved that there was a disturbance of plaintiff's possession; and therefore the plaintiff was entitled to the injunction prayed for, and he must have the costs of the suit. Judgment accordingly.

MELTON MOWBRAY.

THE new Cattle Market here has been opened, and is now used by the public. The pens for beasts and sheep are constructed of wrought and cast iron entirely, and are very substantial. The beast-pens are paved with Mountsorrel squared granite, the sheep-pens with asphalte, and the avenues are of the same material. The general roads and avennes of beast-pens are macadamised and covered with gravel. On the east side of the market, contiguous to the sheep-pens, is a large covered shed, fitted up with wrought-iron pens for pigs, and a similar shed is placed on the west side, contiguous to the beast-pens, for calves. In the centre of the market is a conveniently-arranged settling-room and office for clerk of the market, at the back of which are closets and urinals; and still further back is the public slaughter-house, which has fasting-pens and the usual appliances, and the walls of which internally are lined with white-glazed bricks, giving it a cleanly appearance, and offering every facility for rapid cleaning after it has been used. Over these buildings is a large wrought-iron tank, from which the water is laid on to various points to supply the market. The market is divided from the adjoining paddocks by a wrought-iron fence, with gates, at intervals, to admit of the paddocks being used at fairs in connexion with the market. There are two entrances, at each side of the market, both opening into important public thoroughfares, and these have massive stone piers, and very strong ornamental wrought-iron gates. MacFarlane's urinals are placed in different parts of the market. There is also a convenient loading-stage for sheep and pigs. The drainage, which is of an elaborate character, comprises nearly a mile of glazed piping, and is carried into the main sewer belonging to the town. A large refreshment-room is now in course of erection in the market.

The contract for the general works was taken by Messrs. Weaver & Son, of Melton; and that for the ironwork by Messrs. Richards & Co., of Leicester; and the work has been well and substantially carried out from the plans and under the superintendence of Mr. R. W. Johnson, architect, of Melton Mowbray, the total outlay being about 5,000*l.*

The new Wesleyan Chapel and Schools have been commenced, the first stone having been laid by Mr. J. S. Budgett, of London, with the usual ceremony. The new building comprises a lofty school-room and class-rooms under the chapel. The chapel itself, which is raised some 6 ft. above the ground, to enable the basement to be well lighted, has side aisles and two transepts at the east end, and galleries round three sides. The organ-chamber is at the back of the pulpit. The principal entrance is from the west front, which has two towers at angles, containing the staircases to galleries and schoolrooms. The building, which is Gothic in character, will be of red bricks, with stone dressings, and will have a high-pitched open roof. Messrs. Winkles & Kellett, of Leicester, are the contractors, the amount of their tender being 2,400*l.*, subject to a deduction for old materials, under the direction of Mr. Johnson.

THE SAXON CHURCH, WHITTINGHAM.

THE upper stages of the Saxon tower of the church at Whittingham, in Northumberland, illustrated by Rickman, were destroyed in a restoration of the church, which took place in 1840. The works undertaken at that period at this interesting church did not comprise the chancel, which was erected in the most debased style *temp.* Queen Anne. Lord Ravensworth, whose seat, Eslington Park, is in the parish, has resolved to restore the chancel in a manner commensurate with the extent and dignity of the rest of the fabric. Approved designs have been made by Mr. F. R. Wilson, architect, Alnwick, and the works are to be forthwith carried out.

CRYSTAL PALACE COMPANY.

THE thirty-first ordinary general meeting has been held; Mr. T. Hughes, M.P., in the chair.

The Chairman, in submitting the usual confirmatory motion, referred, in terms of regret, to the loss the company had sustained by the death of the late manager, Mr. Bowley. Rockhills, the late manager's residence, it was hoped, would be taken by the refreshment contractors at a rental. It was to be regretted that the receipts of the past year had been about 5,000*l.* less than in the previous year, viz., 138,000*l.* as against 143,000*l.*, owing to a falling off in the number of visitors, and a decrease of 980*l.* in the receipts from rental, while the expenditure had increased 400*l.* in rates and taxes and for water; but, on the other hand, 3,700*l.* had been saved in the cost of attractions. The expenditure in permanent repairs remained heavy, and would do so for some time to come. The general result of the year's working was that on an expenditure of 97,000*l.* the net earnings had been 43,000*l.* As to the future, they must expect that the Music-hall at Kensington and the Alexandra Palace would compete with them; but there was no reason, having regard to the new attractions,—the aquarium amongst others,—and the new railway facilities from the east and other parts of London and the suburbs, to doubt that the progress of the company would be satisfactory. The surplus land at the lower part of the grounds had been advantageously let, and would ultimately bring in a ground rental of 1,300*l.* Some doubts were expressed by shareholders as to whether the special attractions were profitable, considering the great cost of producing them. Mr. Dean saw in decreasing revenue and increasing expenditure cause not only for discouragement, but alarm. A long and desultory discussion took place, ending in the adoption of the report, and a dividend of 1 per cent. was declared.

DISCOLORATION OF PAINTED COMPO FRONTS.

SIR,—About a fortnight ago, the lower front of my house, which is compo, painted, became in a few hours covered with unsightly blotches and streaks, just as if some dirty fluid had been thrown at it. The whole front had been painted in the last spring: so I called on my painter to explain so extraordinary an effect. He attributed it to effluvium from drains.

This opinion has so much alarmed me that I shall be much obliged by any of your professional readers giving their opinion as to the cause of the appearance I have described, and still more so if they will suggest a remedy.

My house is situate close to Portman-square, where I observe several compo-painted fronts presenting similar unsightly indications.

INQUIRER.

*** The occurrence at certain periods of these blotches on painted cement was discussed at some length in our pages a few years ago.

ITEMS OF VALUATION.

A EMPLOYS B to do some work of alteration, fitting up, &c.: no agreement or contract. Work done, B sends the account, without any items or particulars, but claiming a lump sum for the job.

A demurs, and asks for items; B refuses. The work is eventually referred to valuers.

A's valuer reduces the sum claimed by 20*l.*; B's valuer reduces it likewise, but only 5*l.* B's valuer, at the same time, refuses to compare valuations with A's, and as such they do not agree.

A third valuer is called, and he confirms B's valuation save a few shillings, but, at the same time, does not give items or show how he has arrived at the sum.

What I want to know is:—1st. Is B's valuer justified by law (not custom) in refusing to compare valuations? 2nd. Is the third valuer also justified by law in withholding the particulars of his valuation from A? For be it understood, up to this time, save only from his own valuer, A is called upon to pay a large sum of money for work done, but has had no items of their particular cost. The work consists of bay-window, door, frontispiece, wardrobe, counters, shelves, &c.

*** Under the apparent circumstances of the reference, a bill of the items could not be insisted on.

DATE OF THE SANCHI TOPE.

SIR,—The following is the statement issued by the Science and Art Department, from which it appears there is no great difference of opinion between Mr. Fergusson and the Department on the subject. General Cunningham, now Archæological Surveyor-General in India, fixes the date of the Tope at B.C. 500, which the Department adopted. Mr. Fergusson says B.C. 250; and this is supposed to be the date of the stone railing round the Tope.

"The Tope is situated on the top of a sandstone hill above 300 ft. above Sanchi. It consists of a solid dome of stone and brick, 121 ft. in diameter and 62 ft. in height. This is surrounded by a stone railing at a distance of 9 ft. 6 in., and four stone gateways were added to it. The dome dates from about 500 B.C. The stone railing is probably 250 years later, and the gateways were erected about the commencement of the Christian era. The votaries of Buddhism far outnumber those of other creeds, excepting the Christian; and this ancient monument is one of the earliest records of the growth of a religion which now owns not a single follower in the cradle of its birth, India, but can count in other countries 222 million adherents.

This cast was made in the winter of 1869 70, under the direction of Lieut. H. H. Cole, R.E., Superintendent of the Archæological Survey of India, North-Western Provinces, by Sergeant Bullen, R.E.; Corporal Jackson, R.E.; Corporal

Heath, R.E.; and nine native modellers. The party left Calcutta 10th of December, 1869, and Jubbulpore on the 13th, where the materials, tools, plaster of Paris, &c., weighing in all 28 tons, were transferred to country carts drawn by bullocks. Sixty carts were procured at Jubbulpore, and on the 20th of December the march was commenced to Sanchi about 180 miles distant. On 7th January, 1870, Sanchi was reached, and the work of casting commenced. The cast was completed on the 21st February, 1870, and reached London, *vid* Hoshungabad, Bombay, Suez Canal, and Liverpool, early in June. Three copies were then made by October of the same year. The process of making elastic moulds with gelatine was employed both at Sanchi and in the repetition of copies in London."

It seems that on the card of invitation, to "a private view of the cast of the eastern gateway of the Sanchi Tope from Central India (erected 500 B.C.)" Mr. Fergusson read the date of 500 B.C. as applicable to the gateway rather than the Tope itself. ASIATIC.*

ST. PAUL'S CHURCHYARD.

IT is anticipated that the proposed improvement at St. Paul's Churchyard, by throwing open the enclosed area at the western end of the cathedral, will shortly be carried into effect. The dean and chapter offered the ground to the Commissioners of Sewers for 20,000*l.*, and the latter body applied to the Metropolitan Board of Works for a contribution towards this amount; but the Board declined to make any grant unless the dean and chapter consented to throw open the roadway on the northern side of the cathedaal for carriage traffic. The finance and improvements committees then intimated to the chapter that, under the circumstances, they were prepared to recommend the commissioners to pay 15,000*l.* for the ground instead of 20,000*l.* Before coming to any conclusion on this proposal, the cathedral authorities have written to inquire whether they are to understand that, in the event of their assenting to the opening of the roadway on the northern side for carriage traffic, the Commissioners of Sewers will be prepared to provide the larger sum, viz., 20,000*l.*; and the finance committee recommended that this question be answered affirmatively. The Commissioners of Sewers have approved of this recommendation.

MANUFACTURERS' NAMES IN ARCHITECTS' SPECIFICATIONS.

SIR,—I wish you would lend us your powerful assistance in sweeping away the above practice, as a pernicious relic of bygone days—wrong in principle, and seldom justifiable in actual practice. I believe professional men of the metropolis have advanced beyond this stage, and do not bind their builders to any one name, but insert provisional clauses for good quality, which are just as efficacious, and far more just.

In the country it is not so. I could name five or six architects in one town (and the leading men as well) who copy, in stereotyped form, specifications one after another, and have so copied them from their early youth upwards with a most serene indifference or ignorance of the progress of manufactures for the past ten years or more.

This should not be. The results are—1. That the maker named charges more than the fair competitive price, for which the employer and not the builder pays. 2. That the practice opens the road to bribery, or at least the imputation of bribery, which the profession should avoid. 3. That it is in itself opposed to the English notion of justice and fairplay. 4. That the system is opposed to free-trade and the improvement in manufactures. 5. That it leads architects to rely on a name, instead of making themselves acquainted with the properties of the article itself, and thus narrows their practical knowledge. 6. That it is not necessary in the present day, as, with the exception of recent patents, few makers are so pre-eminent in any manufacture as to be entitled to a sweeping preference in opposition to the principles before mentioned.

Let a standard be adopted, or a sample submitted, that the competition may be open and fair to all.

I trust these remarks may induce some architects to reconsider their position in this matter.

A MANUFACTURER.

* In Mr. Fergusson's communication, for "Christian Crusade," read *Christian Era*.—ED.

STAINED GLASS.

Christchurch, Fulwood.—Three memorial windows, according to the *Sheffield Independent*, have been placed in this church, in memory of the late Mr. Wm. White, and formally inaugurated. Mr. White was a prominent Freemason, and the founder of several lodges, the members of which have testified to the high admiration and esteem in which they held him by raising this tribute to his memory. The windows selected are the central three of the five on the south side of the church, immediately under which lie the remains of the deceased. The subject of the centre window is King Solomon, crowned and in his royal robes, holding in the right hand a sceptre, and in the left an orb. Each of the other two windows contains three Masonic emblems,—the golden double-headed eagle, the triple tau, the double triangle, the pentalpha, the pelican, and the lamb on the book of seven seals. The windows are from the manufactory of Messrs. Heaton, Butler, & Bayne, of London; and the cost will be 100 guineas.

Queensbury Church.—A memorial window has been placed in this church, in memory of some of the family of the late Mr. John Greenwood, of Queensbury. The window, which is by Messrs. Ward & Hughes, of London, has been appropriated to the three Resurrections,—viz., the raising of the widow's son, the raising of Jairus's daughter, and the raising of Lazarus.

Roman Catholic Church, Warwick.—Three stained windows have just been executed for this church, by M. Dury, artist, Warwick,—one of St. Joseph, in the chancel, and two others in the west end of the church, representing the Annunciation and the Nativity. These, in conjunction with two others by the same artist, of the Repose in Egypt and the Life in Nazareth, form a series representing the Infancy of our Lord.

Trinity United Presbyterian Church, Greenock. A large stained-glass window for the south end of this church, now approaching completion, has just been finished by Messrs. Ballantine & Son, of Edinburgh. The window consists of five upright lights, with extensive and elaborate top tracery. The five leading compartments contain illustrations of Scripture history, consisting of Moses with the Tables of the Law, Samuel anointing David, Christ's Sermon on the Mount, the Angels announcing to the Marys the Resurrection of Christ, and Paul Preaching at Athens. These subjects are all surmounted with elaborate canopies, and in four of the base panels are emblems of the Trinity, while in the central panel beneath the illustration of Christ's Sermon on the Mount is an angel bearing a scroll with the inscription, "Come unto me, all ye that labour and are heavy laden, and I will give you rest." In two leading forms of the top tracery are illustrations of the Sacrifice of Isaac and of Elijah Raising the Widow's Son. There is no enamelling, all the colours being pot-metal. The ornamental portions are all architectonic, and in harmony with the Early English Pointed style of architecture of the building. The draperies and grouping of the figures, with the expression of the countenance are treated in the Mosaic style.

Bapchild Church.—A stained-glass window, the gift of Mr. James Lake, of Newlands, has been inserted in the west end of this church. It is in memory of the donor's father, Mr. John Lake. The subjects represented are St. Peter and St. Paul, on either side respectively, and the Patron Saint (Lawrence) in the centre.

Christ Church, Moss-side, Manchester.—The interior of this church is being enriched by the insertion of two sets of memorial windows, which fill the lights of both transepts. The windows are in memory of the late wife and daughter, and two daughters-in-law, of Mr. William Wilson, of King-street and St. James's-square, and of Grove House, Greenheys. The three lights in the south transept form one monument in memory of Mrs. Wilson, comprising groups emblematical of the three Graces—Faith, Hope, and Charity; and those in the north transept are separate monuments in memory of the three younger members of the family, being scriptural representations of Affection, Belief, and Obedience, as illustrated by leading scenes in the lives of Ruth and Naomi, Mary of Bethany, and the Virgin Mary. The designs are by Mr Linklater, of the firm of Price & Linklater, architects, and the work has been executed by the Messrs. Edmundson. The windows have been presented by Mr. Wilson.

Books Received.

Victoria: Patents and Patentees. Vol. III. *Indexes for the Year* 1868. By W. H. ARCHER, Registrar-General of Victoria. Melbourne, 1870.

Victoria: Abstracts and Specifications of Patents applied for from 1854 *to* 1856. *Ac to Bu.* By W. H. ARCHER. 1870.

THE second of these blue-books contains abstracts of the patents for building materials, the most numerous division of which relates to bricks, mantelpieces, tiles, artificial stones, &c.; and the next to cements. The Indexes for 1868 are divided into three parts,—a subject matter index, an alphabetical, and a chronological index.

VARIORUM.

CASSELL'S "Technical Educator" has the following remark on "the study of the beautiful, and its practical value:"—"At the very outset we must recognise the fact that the beautiful has a commercial or money value. We may even say that art may lend to an object a value greater than that of the material of which it consists, even when the object be formed of precious matter, as of rare marbles, scarce woods, or silver, or gold. This being the case, it follows that the workman who can endow his productions with those qualities or beauties which give value to his works, must be more useful to his employer than the man who produces objects devoid of such beauty, and his time must be of higher value than that of his less skilful companion. If a man, who has been born and brought up as a "son of toil," has that laudable ambition which causes him to seek to rise above his fellows by fairly becoming their superior, I would say to him that I know of no means of his so readily doing so, as by his acquainting himself with the laws of beauty, and studying till he learns to perceive the differences between the beautiful and the ugly, the graceful and the deformed, the refined and the coarse. To perceive delicate beauties is not by any means an easy task to those who have not devoted themselves to the consideration of the beautiful for a long period of time; and of this be assured, that what now appears to you to be beautiful, you will shortly regard as less so, and what now fails to attract you, will ultimately become charming to the eye."

——"The City Diary," published by W. H. & L. Collingridge, of the *City Press*, has again made its appearance. In addition to the matter ordinarily given in a diary for the desk, it contains much official information with regard to the City. It is a complete guide to the various business offices of the Corporation and City generally.

Miscellanea.

The Baptist Mission-house, Holborn.—This new building is situated in Castle-street, Holborn, and has been erected from the designs of Messrs. Searle & Son. On passing through the vestibule, the main office is to the right. It is about 30 ft. square. To the left of the lobby are the secretaries' rooms. Immediately opposite there is a large and comfortable waiting or reading room. Fronting the entrance is the library. This is about 48 ft. long by 30 ft. wide. It is surrounded by a gallery. Bookcases occupy all the bays formed by the piers on which the roof rests. The room will accommodate 300 persons. Ascending the stone staircase, we first come to the doors, which admit to the gallery of the library. On the main landing is the committee-room, about 37 ft. by 22 ft. There are other offices above this landing. Five offices, together with the housekeeper's apartments, occupy the second floor, and the top floor is wholly devoted to rooms of a domestic character. The site for the new premises cost 4,500*l.*, and the estimate for the structure is 8,347*l.*

The Bradford Gasworks.—The Bradford Gas Company have agreed to sell their undertaking to the corporation for 210,000*l.*

To Take Plaster Casts of Natural Objects.—At the Manchester Literary and Philosophical Society, Mr. Boyd Dawkins exhibited a number of casts in plaster of Paris of various objects of natural history, and explained the process by which any one can make them for himself. The material of the mould is artists' modelling wax, which is a composition akin to that used by dentists; and, as it becomes soft and plastic by the application of heat, though in a cold state it is perfectly rigid, it may be applied to the most delicate object without injury. As it takes the most minute markings and striations of the original to which it is applied, the microscopic structure of the surface of the original is faithfully reproduced in the cast. This method is briefly this:—1. Cover the object to be cast with a thin powder of steatite or French chalk, which prevents the adhesion of the wax. 2. After the wax has become soft, either from immersion in warm water, or from exposure to the direct heat of the fire, apply it to the original, being careful to press it into the little cavities. Then carefully cut off the edges of the wax all round, if the undercutting of the object necessitates the mould being in two or more pieces, and let the wax cool with the object in it, until it is sufficiently hard to bear the repetition of the operation on the uncovered portion of the object. The steatite prevents the one piece of the mould sticking to the other. The original ought to be taken out of the mould before the latter becomes perfectly cold and rigid, as in that case it is very difficult to extract. 3. Then pour in plaster of Paris, after having wetted the moulds to prevent bubbles of air lurking in the small interstices; and if the mould be in two pieces, it is generally convenient to fill them with plaster separately before putting them together. 4. Then dry the plaster casts either wholly or partially. 5. Paint the casts in water colours, which must be fainter than those of the original, because the next process adds to their intensity. The delicate shades of colour in the original will be marked in the cast by the different quantity of the same colour, which is taken up by the different textures of the cast. 6. After drying the cast, steep it in hard paraffine. The ordinary paraffine candles, which can be obtained from any grocer, will serve the purpose. 7. Cool, and polish the cast by hand with steatite. The result of this process is said to be far better than that obtained by any other.

An Ancient Bronze Plate, with Runes found in Ireland.—An interesting antiquarian discovery has been made on Lord Rathdonnell's estate at Gormanstown, county Louth. In an ancient mound, consisting of the materials of an old sea-beach, were found mingled some charcoal and many broken and half-burnt bones, &c. About 11 ft. from the surface, or top, of the mound the excavators came upon a small bronze plate lying upon what the finder likened to an edging of snuff-coloured dust or burnt paper. This plate on being carefully cleaned, was found beautifully ornamented on one side in silver tracing, with the involuted "whorls" and twistings so common on the very ancient Irish monuments, and particularly at Monasterboice, formed by the interweaving of a triple cord. On the other side it bore, in clear and well-defined Runic characters, an inscription which has been translated as follows:—"Tomi (or Tomri) of Solshof owns this sword." The snuff-coloured powder lying about the plate was entirely the remains of the sword-belt. The plate has been transmitted to the Society of Antiquities in Copenhagen; and the opinion of the best Runic scholars is to the effect that it belonged to "Tomar of the Torque," of Dublin, Earl Tanist to the King of Lochlann, in the ninth century of the Christian era, and the Danish chieftain alluded to by the poet Moore as having the collar of gold torn from his neck by King Malachy. The question has been started, why was Tomar interred at ancient Drumcath, or how came a portion of his sword to be found there? The subject is to be brought before the Archæological Society of Kilkenny.

Surveyorship, Croydon.—The surveyorship of the borough of Croydon having become vacant, by the resignation of Mr. Albert Latham, the Local Board of Health requested their consulting engineer, Mr. Baldwin Latham, C.E., to nominate five gentlemen from whom a selection might be made. From these the Board, at their last meeting (20th instant), elected Mr. Thomas Walker, borough surveyor of Rochdale, to fill the same office at Croydon.

The Salt Library.—A public meeting of the inhabitants of Staffordshire, convened by the high sheriff, has been held at the Shire-hall, Stafford, for the purpose of publicly thanking the widow of the late Mr. Salt, of the firm of Messrs. Stevenson, Salt, & Co., bankers, London, and Stafford, for her munificent present of books, engravings, antiquarian works, and very costly documents relating to Staffordshire, collected by her husband at an expense of upwards of 31,000*l.*, and to determine the best mode of raising an adequate fund for their preservation and utilisation. The high sheriff, Mr. J. Hartley, presided, and there was a very numerous and influential attendance. The Earl of Harrowby moved a resolution affirming the advantage of retaining within the county the splendid collection of Mrs. Salt. The resolution was seconded by Colonel Bagnall, and carried unanimously. The Earl of Dartmouth moved the appointment of a committee, consisting of the Duke of Sutherland, the Earls of Lichfield, Shrewsbury, Bradford, Harrowby, and Dartmouth, Lords Hatherton, Wrottesley, and Bagot, Viscount Sandon, M.P., and many other influential inhabitants, with a view to considering in what way the conditions which Mrs. Salt attached to her gift might be best complied with. The mayor of Stafford (Mr. H. Gillard) seconded the resolution, which was carried unanimously. Lord Hatherton, in moving that a subscription be at once entered into, observed that Mrs. Salt's wish was, that the library should be safely deposited in a building erected especially for the purpose, or some appropriate existing institution either at Stafford or Lichfield, and that a librarian should be appointed. Mr. A. Sparrow seconded the resolution, which was cordially agreed to. The Earl of Lichfield moved that, with a view to providing a fitting memorial of the late Mr. William Salt, by the erection of a suitable building for the library and the endowment of a librarian, the meeting should pledge itself to take immediate steps to raise a sum of not less than 7,000*l.* He considered a building worthy of the library would cost at least 4,000*l.*, and a further sum of 3,000*l.* ought to be raised as the nucleus of an endowment fund. Mr. Cartwright seconded the resolution, which was carried with acclamation. A subscription was entered into, and about 1,000*l.* were promised in the room, including the Rev. Walker Sneyd, 105*l.*; the Earl of Lichfield, 100*l*; the Earl of Dartmouth, 100*l.*; and the Earl of Harrowby, 100*l.*

Gas Fires and Stoves.—Mr. J. O. N. Rutter, of Black Rock, Brighton, gives the following, with other particulars, as to useful forms of gas fires and gas stoves. The gas fire consists of pumice (usually called pumice-stone), broken into tolerably small pieces, packed together to the height of the bars in an ordinary fire-grate, and heated to incandescence by gas. The pumice being carefully arranged, and the gas properly applied, in a few minutes there will be a brilliant fire. Here will be nothing to disturb our old-fashioned notions and susceptibilities about the cheering effects of an open fire,—a fire which can be seen as well as felt. The cost of materials and workmanship is very trifling,—only a few shillings; but the cost of keeping up the fire is greater than that of a coal fire. Taking the cost of a coal fire at ½d. per hour, that of a gas fire will be about 1½ of a penny. This must be taken into consideration when estimating the advantages of a gas fire. The pumice rapidly gets into a glow, and is nearly indestructible, without dust or other nuisance, and the fire gives good heat and can be diminished or increased at will. Mr. Rutter also thus describes a gas stove:—

"During the last twelve winters I have had the enjoyment of a stove which is isolated as respects the room in which it is fixed. The air which supplies the means of combustion to the gas-jets is conveyed from out-of-doors, underneath the floor, and through the bottom of the stove; and the exit-flue communicates with the chimney of an adjoining room. The perfection of warming by gas is thus attained. Any required temperature can be maintained without varying one degree for any required period. . . . . A room which has no chimney, nor one near enough to be available, can be effectually and healthfully warmed; and a room with a chimney, but useless by reason of down-draught, may be made as comfortable as any other in the house."

With such a chimney a gas fire does not do well.

Cottage Hospitals.—Mr. Sotheron-Estcourt has just presented to the Devizes Corporation a site for the establishment of a cottage hospital at that place. The gift has been accepted, and funds are being raised to defray the cost of the erection. These institutions have spread since we first began to urge their value.

The Education Movement.—Last week the Lord-Lieutenant of Warwickshire, Lord Leigh, presided at the College, Binswood, Leamington, on the opening of the new boarding-house, which now forms the western side of the quadrangle of the extensive building, in this fashionable inland watering-place. The head-master, the Rev. H. G. Woods, Fellow and Tutor of Trinity College, Oxford; J. R. Thursfield, B.A., Fellow and Tutor of Jesus College, Oxford; and other well-known educationalists took part in the proceedings. A number of scholarships were awarded to the most successful students, the annual speeches made, and prizes given. The new boarding-house has the residence of a master attached to it, under whose management it will be conducted. The basement and ground-floor contain various requisite offices, also a dining-hall, a school-room, as well as several private studies, which will be placed at the disposal of the most diligent boys. The upper floors contain forty dormitories, bath-rooms, and other apartments; also separate rooms for invalids. The whole is heated with hot water.

The Rating of Government Establishments.—It is understood that it is the intention of her Majesty's Government to introduce a measure into Parliament for the purpose of removing the exemption which exists in the case of Government property from the payment of parochial rates in connexion with other exemptions. Believing that the other exemptions (under which comprehensive head charities, parks, and other things are included) are likely to give rise to so lengthened a discussion in the House of Commons as materially to retard the settlement of that which is in itself a very simple and pressing question,—viz., the rating of the public works, which, being established for the benefit of the whole nation, ought in all their collateral charges to be a burden upon the nation, and not upon any particular locality. The Premier is being urged to deal with this subject by a separate Bill, which would be almost certain to command the support of all parties in the House of Commons. We hope the suggestion will be early acted on.

Property Sales.—Mr. Parker Tomlinson offered for sale, at the Red Lion Inn, Retford, a property situated in South Leverton, and Treswell. All the lots were ultimately sold. Lot 1, a farmhouse, orchard, &c., and three closes of grass land, in all 12a. 0r. 12p., was knocked down to Mr. T. Smith, for 1,050*l.* Lot 2, 3a. 2r. 8p. of grass land was purchased by Mr. Smith for 95*l.* per acre. Lot 3, a close of arable land, 3a. 2r. 22p.; Mr. Turner was the last bidder at 54*l.* per acre, but it was reserved for 58*l.* Lot 4, 7a. 2r. 13p. of arable land was purchased by Mr. J. Bomford for 54*l.* per acre. For lot 5, 4a. 1r. 23p. of grass land, Mr. J. Q. Wells was the last bidder at 92*l.* per acre,—reserved at 95*l.* Lot 6, 35a. 0r. 4p. of arable land, was purchased by Mr. George Scott at 66*l.* per acre.—— Mr. Sheppard sold at the Bull's Head Inn, in Loughborough, in two lots, a freehold estate, situated in the parish of Hoton, and containing 44 acres. Lot 1, 30 acres of land, with farmhouse and buildings, realised 92*l.* per acre. Lot 2, 14a. 2r. 21p., sold for 96*l.* per acre. Colonel Packe was the purchaser.

The Bridge over the Severn at Welshpool.—The mayor of Welshpool and the town clerk have had a meeting with Mr. John Naylor, at Leighton Hall, with reference to the proposed bridge over the Severn. Mr. Naylor said he would give them the ground on both sides the Severn, for the abutments and necessary approaches to the bridge, and also "the ferry," which brings in 40*l.* a year to Mr. Naylor at the present time. The mayor has opened a subscription list, and has been promised between 300*l.* and 400*l.* already. The bridge is intended to be toll free. Thirteen lives have been lost, within the last fifteen years, by persons attempting to cross the Severn at Leighton Ford, the site of the intended bridge. Lord Powis has promised to give the subject his best consideration. We believe the total cost will be about 3,000*l.*

New Schools, Newport, Salop.—We are informed that in answer to advertisement thirty-four sets of plans were received by the committee, and that they have awarded the premium to Mr. John Ladds, of Chapel-street, Bedford-row, and have instructed him to prepare specification and details for carrying out the works.

Arbitration Case, Bolton. — Mr. Isaac Holden, of Manchester, sat as umpire in a dispute between Messrs. Day & Raby, joiners, of Crown-street, Bolton; and Messrs. Ellis & Hinchliffe, builders, of Manchester, arising out of a contract for the carpenters' and joiners' work for the new County Court buildings in Mawdsley-street. The amount claimed for extra works by Messrs. Day & Raby was 934*l*. After several meetings, we understand that the case has now been settled by the umpire awarding to the plaintiffs the sum of 14*l*. 5s. 10d.; the costs, which we understand amount to 300*l*., being divided equally between the disputants. Mr. James Lomax, surveyor, of Bolton, was arbitrator for Messrs. Day & Raby; and Mr. Thomas Taylor, surveyor, of Manchester, for Messrs. Ellis & Hinchliffe.

Instruction in Science and Art for Women.—In the eleventh (the last but one) of his course of lectures on the elements of physical science, or "Physiography," delivered at the South Kensington Museum, Professor Huxley examined the geological features of the basin of the Thames, and pointed out some of the climatic and physical changes which, in common with the rest of Britain and Northern Europe, it must have undergone in the course of past ages. In the Thames basin were found remains of the arctic musk sheep, bison of America, and rhinoceros of Asia, which also has been found "in the flesh," frozen up in floats of ice for thousands of years.

Sanitary Improvements in St. Pancras since 1855.—There has been printed, by authority, the copy of a letter from the Metropolitan Board of Works with a series of questions as to the sanitary and general improvements effected by the vestries from the passing of the Metropolis Management Act, 1855, with the replies given on behalf of the vestry of St. Pancras. From this document it appears that the total amount expended in sewerage, paving, and other improvements in the parish since 1st January, 1856, including the cost of public lamps to Lady-day, 1870, is 884,774*l*. The present mileage of streets and roads in the district is about eighty miles.

The Holborn-circus Branch of the Union Bank of London.—This building, on the Viaduct, occupies a site of 132 ft., with a depth of 68 ft. The design of the building is Italian in style, and the material used in the elevation is Portland stone. The basement is to be used for the reception of safes and as strong rooms. The ground floor will be devoted to the purposes of the bank, and a large portion of the building will be let out as offices and for general business. Mr. F. W. Porter is the architect. The floors are on Messrs. Fox & Barrett's principle, with blue lias lime concrete of Mr. W. Lee's manufacture. The contractors for the building are Messrs. Holland & Hannen. The carving is being executed by Mr. Kelsey, and Mr. Brodie is clerk of the works.

Royal Academy of Music.—The competition for the Westmoreland Scholarship and Potter Exhibition took place on Monday, the 19th instant, at the Institution in Tenterden-street, Hanover-square. The results were as follow: — Westmoreland Scholarship — Miss Mary Crawford (elected), Miss Pocklington, Miss Rebecca Jewell, Miss Frith, and Miss Goode (highly commended). Potter Exhibition —Miss Agnes A. Channel (elected), Miss Field, Miss Taylor, Miss Gardner, and Miss Waite (highly commended).

Condition of Liverpool.—We have already mentioned that Professor Huxley, as President of the British Association, was requested by the Town Council of Liverpool to nominate two gentlemen to report on the propriety of using ashpit refuse as the foundation of new houses in Liverpool. We understand the Professor has named Professor Parkes, of Netley, and Dr. Sanderson, of University College. The Town Council have further resolved to take the opinion of these same gentlemen on the sanitary condition and ventilation of the sewers.

The Working Men's Exhibition.—A workman complains that a model sent by him, and exhibited in the Agricultural Hall, was returned to him damaged, and not in his own case. Exhibitors must make allowances for officials in such circumstances. The wonder, perhaps, is that the committee were brave enough to take upon themselves the onerous duty of returning objects exhibited.

Sturston Church, Norfolk.—This church having just been restored and a new aisle added, the builder, Mr. George Grimwood, gave the men in his employ a dinner. Upwards of sixty sat down. The chair was occupied by Mr. Grimwood, supported by Mr. William Boatwright, of the firm of Jecks & Ranson. Mr. Johnson and Mr. Gostling responded for the carpenters, and Mr. Rust and Mr. Middleton for the bricklayers, who spoke to having served Mr. Grimwood for twenty-five years, and they hoped to serve him as many more. The architect was Mr. R. M. Phipson.

Architectural Association.—On Friday evening, the 16th, a paper was read by Mr. S. Salter "On the Arrangement and Ventilation of Hospitals." After referring to the several plans upon which hospitals were constructed, and pointing out the advantages of the pavilion system, he proceeded to describe more particularly the arrangements adopted in the new St. Thomas's Hospital by Mr. Currey; the Small-pox Hospital, at Stockwell, by Mr. T. H. Wyatt; and the Fever Hospital, also at Stockwell, by Mr. Marrable; several drawings of which, showing the construction, plan, and ventilation, were kindly lent for the occasion by the architects.

Improvement of Park-lane.—A correspondent, "J. A. A.," proposes a plan, similar to one we illustrated in the early stage of the discussion, for obtaining a better thoroughfare by commencing it on the west side of Apsley House, and running into Park-lane at Stanhope Gate. It would be worse than useless now to reopen the question. All the arrangements are made for effecting the desired improvement by means of Hamilton-place.

Early Settlements.—During the operations for draining off a tarn at Ehenside, near Egremont, Cumberland, the remains of an ancient British settlement have been discovered. Stone and flint implements, such as axes, knives, and chisels, have been found in large numbers. Some pieces of oak are cut in lengths, evidently from massive full-grown trees such as have not grown in that locality for many ages.

The Tower of St. John's, Chester. — The state of this tower having been found to be very dilapidated, a meeting of parishioners has resolved to take immediate steps for its repair; and to that end a committee has been appointed to obtain an architect's report on the state of the tower.

British Archæological Association.—At the next meeting, on Wednesday, January 11, 1871, Mr. W. F. Holt will read a paper on "The Tames of Fairford."

Works at Marlborough House. — A "Looker on" sends us a somewhat mystical letter as to the terms on which the men are employed by the builder at Marlborough House.

TENDERS.

For building a thirty-quarters malthouse at the Queen-street Brewery, Ramsgate, for Messrs. Tomson & Wotton. Mr. Benjamin Adkins, architect. Quantities supplied by Mr. Thomas M. Rickman:—

Smith & Son	£2,935	0	0
Wilson	2,698	0	0
Epps	2,665	0	0
Harrison	2,650	0	0
Osborn	2,360	0	0
Shrubsole	2,347	0	0
Snell & Rayte	2,347	0	0
Adcock & Rees	2,313	0	0
Saunders	2,290	0	0
Hayward (accepted)	2,145	0	0
Woodcock	2,087	0	0

For the erection of bakehouse, oven, and other buildings, at Carshalton, Surrey, for Mr. Dyett. Mr. Bunker, architect:—

Cuff	£318	0	0
Noble	239	0	0
Richardson	237	0	0
Keal (accepted)	235	0	0

For gasfittings and ventilating tubes at the new Infirm Wards, St. Luke's Workhouse. Mr. H. Saxon Snell, architect:—

Pontifix	£379	10	0
Turner & Co.	320	0	0
Garnett	285	0	0
Crabb & Vaughan	284	0	0
Jeal	259	0	0
Abercombie	232	8	0

For alterations and repairs to the house, No. 58, Upper Marylebone-street, for Mr. Alfred Yates. Mr. A. Baker, architect:—

Hatchman & Son	£625	0	0
Houghton	527	14	0
Hyde	499	0	0
Scrivener & White	493	0	0
Watson, Brothers	428	10	0

For new factory, &c., at No. 402, Hackney-road, for Messrs. W. Williams & Son. Messrs. Lee & Walton, surveyors:—

Axford	£630	0	0
Ramsey	574	0	0
Blackmore & Morley	525	0	0
Shurmur (accepted)	494	0	0

For engineering works, gasfittings, laundry-fittings, cooking apparatus, &c., for the workhouse of the Woolwich Union at Plumstead. Messrs. Church & Rickwood, architects. Quantities supplied:—

Rosser & Russell	£3,578	0	0
Deane	3,525	0	0
Jeakes & Co.	3,511	0	0
Fraser & Sons	3,370	0	0
May	3,306	0	0
Beaham & Sons	3,010	0	0
Stiff (accepted)	2,932	0	0

For dispensary and relief offices at Woolwich, for the Woolwich Union. Messrs. Church & Rickwood, architects. Quantities supplied:—

Crockett	£3,940	0	0
Stiff	2,894	0	0
Sollett	2,885	0	0
Perry & Co.	2,797	0	0
Hart	2,778	0	0
Henshaw	2,774	0	0
Kirk	2,759	0	0
Stephenson	2,742	0	0
Eaton & Chapman	2,697	0	0
Nightingale	2,626	0	0
Wright, Brothers, & Goodchild	2,590	0	0
Lonergan	2,582	0	0
Avard	2,550	0	0
Tongue	2,490	0	0
Wilson	2,410	0	0
Hurst	2,373	0	0
Crabb & Vaughan (accepted)	2,290	0	0

For new dead-house and post-mortem room, All Saints', Poplar. Messrs. A. & C. Harston, architects:—

Abrahams	£295	0	0
Riddall	264	0	0
Coleman	263	0	0
Hodges & Robinson (accepted)	250	0	0

For the rebuilding of No. 304, Strand. Mr. J. H. Rowley, architect. Quantities supplied by Mr. Green:—
Sharpington & Cole (accepted) ... £968 0 0

TO CORRESPONDENTS.

Honoris Causa (it is beyond our province to tell architects what they should charge. We should run the risk of misleading if we did so. Look to the schedule issued by the Institute. If employer did not request specification, directly or indirectly, charge for it could not be enforced).—Country Architect (first part of the last reply will serve as answer).—F. H. (send in a written application and copies of testimonials).—P. J. B. C. (Cliché has been sent).—G. B. (shall have attention next week).—A. Y. N. (too late; after notice in every newspaper).—A. S. (cancelled, having appeared elsewhere).—J. B. C. (we looked to receive a fuller report).—L. Builder (we do not give recommendations).—H. H. S.—W. H.—J. E.—H. K.—T. J.—H. A. C.—W. F. P.—C. S.—L. & W.—C. & R.—W.—M. & Son.—G. M.—S. S.—Mr. R.—M. Y. F.—R. K. P.—J. T. P.—T. O.—T. T.—F. R. W.—R. R. C.—G. J. L.—T. S.—H. R.—A. H.

We are compelled to decline pointing out books and giving addresses.

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